

FE31 1

Diagram No. 5531-1

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey .. Field Examination

Field No. PHP-10-4-87

Registry No. FE-311

LOCALITY

State California

General Locality .. San Francisco Bay

Sublocality Southern Portion of

..... San Francisco Bay

.....
19 87

CHIEF OF PARTY
LT F.R. Diaz

LIBRARY & ARCHIVES

DATE November 28, 1988

☆U.S. GOV. PRINTING OFFICE: 1985-566-054

18651 ✓ — 40,000
18652-D, msl, 40,000/80000

HYDROGRAPHIC TITLE SHEET

FE-311

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form,
filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

PHP 10-4-87

State CaliforniaGeneral locality San Francisco BayLocality Southern Portion of San Francisco BayScale 1:10,000 Date of survey 04 to 16 November 1987Instructions dated February 10, 1987 Project No. OPR-L123-PHP-87Vessel Launch 1101 (EDP 0651), Whaler (EDP 0654)Chief of party LT F.R. DiazSurveyed by LT F. Diaz, LTJG T.K. Porta, LTJG E.A. Crozer, ENG TECH B.H. Lund,
SURVEY TECH M.E. BigelowSoundings taken by echo sounder, hand lead, ~~none~~ Pneumatic Pressure GaugeGraphic record scaled by PHP PersonnelGraphic record checked by F.R. Diaz, T.K. PortaEvaluated by: C.R. Davies Automated plot by PMC Xynetics PlotterVerification by R.N. MihailovSoundings in ~~fathoms~~ feet at ~~MLW~~ MLLWREMARKS: Revisions and marginal notes in black generated during office
processing. Separates are filed with the hydrographic data.

✓ AWOIS and SURF 5/89 RWD

WEST FENDER OF OLD BRIDGE



DUMBARTON BRIDGE
EAST FENDER

11/11/87

WEST FENDER



DUMBARTON BRIDGE
EAST FENDER

11/11/87

EAST LOOKING WEST

EAST FENDER OF OLD BRIDGE



DUMBARTON BRIDGE
WEST FENDER

11/11/87

PIERCE PIER ATTACHED TO EAST FENDER



DUMBARTON BRIDGE
WEST FENDER

11/11/87

WEST LOOKING EAST



Pos. 373 and 381



Pos. 380

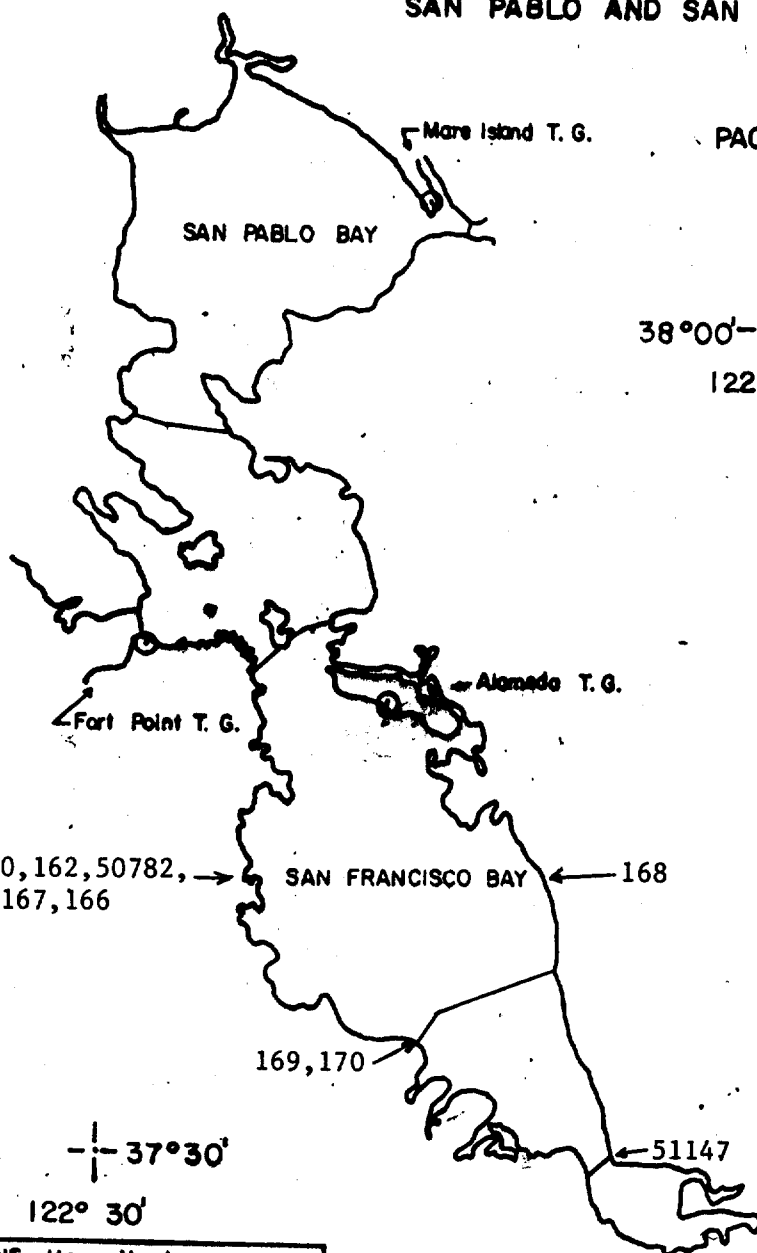


Pos. 678

PROGRESS SKETCH TO ACCOMPANY ANNUAL FIELD OPERATIONS REPORT

OPR-L123-PHP-87

SAN PABLO AND SAN FRANCISCO BAY, CALIFORNIA



PACIFIC HYDROGRAPHIC PARTY

Chief of Party:

LT FEDERICO R. DIAZ

38°00'—
122°00'

(Shoreline from Chart 18652)

160, 162, 50782,
50781, 167, 166

SAN FRANCISCO BAY

168

169, 170

51147

37°30'
122°30'

AWOIS Item Numbers		Month NOVEMBER		Year 1987	
STATUS OF INVESTIGATION					
DISPROVED	50782, 50781, 160, 162, 166, 167, 170				
VERIFIED	51147, 168, 169				
IN PROGRESS					
RESOLUTION NOT FEASIBLE					

DESCRIPTIVE REPORT TO ACCOMPANY HYDROGRAPHIC SURVEY
FE-311, FIELD NO. PHP-10-4-1987
Scale 1:10,000, Year 1987
Pacific Hydrographic Party
Chief of Party: LT Fred Diaz

A. PROJECT.

A field examination was performed in accordance with Project Instructions OPR-L123-PHP-87, dated February 10, 1987, and Change No. 1 dated March 20, 1987. These Project Instructions encompass all of San Francisco and San Pablo Bays.

The field examinations were conducted within the limits of chart 18651. The items investigated were unresolved from basic surveys H-9819, H-9872, H-9952, H-9984, and H-10132 used to update Chart 18651. The following items from the office review, dated October 25, 1984 (given a priority one or two rating), have been completed: 160, 161, 166, 167, 168, 169, 170, AWOIS 50781, 50782, and 51147 (188). ✓

Due to time constraints set forth by the project instructions, the following items (given a lower priority rating) were not resolved: 150, 151, 152, 163, 164, 165, 171 and AWOIS 50785.

B. AREA SURVEYED.

The investigations were performed in south San Francisco Bay, CA, from Oyster Point south to Dumbarton Point. The dates of the survey were from 04 to 16 November (DN 308-320). The survey limits were:

Lat. 37/41/00 N to 37/29/00 N
Long. 122/24/00 W 122/06/00 W. ✓

The southern portion of San Francisco Bay has heavy traffic from deep drafted vessels to shallow draft pleasure craft. The main channel and Redwood creek are maintained by the U. S. Army Corps of Engineers. The Brisbane, Oyster Cove, Oyster Point, and Coyote Point marina entrances are privately maintained and mainly used by privately owned small vessels and a few small commercial vessels.

C. SOUNDING VESSEL.

PHP's Launch 1101 (EDP 0651), was used as the vessel for all data acquisition, bottom drags, and dive investigations.

The vessel is a 29-ft aluminum hulled Jensen launch powered by a turbo charged 3208-T Caterpillar diesel engine and a Hamilton jet drive unit.

PHP 17-ft Boston Whaler (EDP 0654), powered by twin Evinrude 25-hp outboards, was used for wire drag operations as a tow boat only.

D. SOUNDING EQUIPMENT.

Launch 1101 is equipped with a standard Ross Fineline echo sounder and digitizing system which utilizes a centerline mounted, 7.5 degree, 100 KHz transducer. Launch 1101 is also equipped with two side looking digital transducers for navigational use in sloughs, narrow channels, and creeks. The Ross system on launch 1101 consists of the following instruments:

<u>Component</u>	<u>Model No.</u>	<u>S/N</u>
Power Inverter	2000	1071
Transceiver	4000	1081
Analog Recorder	5000	1080
Digitizer	6000	3787

Leadline PHP-1, and pneumatic gauge (S/N B604205N) were used on item and diver investigations. Final field sheet soundings were corrected for leadline and pneumatic depth gage calibration (where appropriate). The pneumatic depth gauge was calibrated once daily when performing diver (least depth) investigations as stated in Hydrographic Survey Guideline #55.

Sounding Instrument Accuracy and Adjustments.

The Ross echo sounding system simultaneously produces an analog echogram and a digitized depth value. Digitized soundings sampled by the logging system at predetermined time intervals are the primary source of sounding line data on the field sheet, but these are supplemented by depths scaled from the analog record in areas where digitized depths were incorrect or lacking. The digitized depths are sometimes triggered by a source other than the bottom (sea weeds, fish, etc.) or from an instrument generated source such as side echos. In these instances the digitized depths were replaced by values scaled from the echogram.

Initial error occurs when the echo sounder's transmit pulse trace is not adjusted to coincide with the zero on the echogram paper. The initial trace alignment was monitored and adjusted during survey operations. Any depths scaled from echograms with initial error were corrected before being applied to the survey.

Phase errors are caused by faulty stylus belt timing in the analog recorder due to belt stretching or improper internal adjustment. The system was checked for phase error at the beginning of each survey day and, with few exceptions, at the end of each survey day (or whenever the analog paper was changed) by introducing simulated depths (e.g. 10 ft, 20 ft, 30 ft, etc.) into the analog recorder via the digitizer phase calibration mode. The analog trace was then compared to the simulated digital depth and the equipment was adjusted as necessary.

The analog's speed had no inconsistencies on this survey.

Static Transducer Draft.

The static transducer draft values for the hull mounted transducer on Launch 1101 was physically measured in two parts. The first part was done while the launch was out of the water. The distance between the transducer face and the bottom of a black line painted on the hull above the water line was measured using a surveying level (Lietz B-1, S/N 214303) and rod. The second part was done with the launch in the water with a normal fuel load on board. The distance between the bottom of the painted black line and the actual water line was measured with a steel tape.

The actual static transducer depth is the distance obtained in part 1 minus the distance measured in part 2. The actual static draft was measured at 1.63 feet.

Sound Velocity Correctors.

Observed depths on this survey ranged from 0 to 50 feet. Sound velocity correctors were derived from bar check data. Bar checks were made once daily, when soundings were obtained.

Before the project commenced, the standard bar for PHP was lost while performing operations (DN 295). To save time and money, PHP requested a replacement bar from PMC, Seattle, WA. The bar sent from PMC was a cast iron grate (6.0 ft x 1.5 ft) which had a smaller length than the PHP standard bar. The location on the deck of the launch where bar checks are performed is 11.25 ft (full beam) between the two chain holders. The line depth was less than what the chain markings (5 to 50 ft) registered, since the chains were scoped inward, toward the hull instead of being straight up and down while performing bar checks. The scoping of the marked chains occurred mostly at the 5- and 10-ft chain markings. As the bar was lowered, the chains became more straight up and down. Line correctors were computed for each chain marking and applied to the bar check data. Results are included in Appendix IV of this report.

* filed with hydrographic data

A sound velocity curve was calculated from the bar check data. The mean and standard deviation was computed for each depth corrector to identify blunders or suspicious data. Since there were so few bar checks on this survey all the data was retained. The overall corrector values for depths were plotted on a depth versus velocity corrector graph. From this graph a line was drawn through the points and a table of correctors was determined. The following table is appropriate for the dates shown:

Table

Inclusive Dates (Year days)

I

308/87 - 320/87

Sounding data was acquired during most of the bottom drag operations. This information was acquired for the launch crew to facilitate drag operations and should not be used for charting purposes since bar checks were not performed.

Sounding data was included on the smooth sheet

Settlement and Squat Corrections.

The digital speed log for Launch 1101 was originally acquired in April, 1984 to test for ground effect, which is the change in speed when moving to and from shallow water (see Ground Effect Report, May, 1984). From this testing it was determined that one method to help reduce the need for ground effect correctors was to operate the launch by constant speed through the water instead of fixed rpm. This decision was cleared through FMC and the speed log was permanently mounted in the hull of Launch 1101. All soundings collected with Launch 1101 were annotated as to speed through the water, not rpm. Speed through the water was likewise used during the settlement and squat tests.

Settlement and squat measurements were observed for the Pacific Hydrographic Party's Launch (EDP 0651), an aluminum Jensen survey launch, on April 7, 1987 (DN 97). This test was conducted during survey operations on OPR-L123-PHP-86 and OPR-L123-PHP-87. The settlement and squat correctors apply to all data acquired on this survey.

Equipment on the launch at the time of the test consisted of normal electronic positioning and depth finding gear (Mini-Ranger, HDL system, Ross echo sounder). The launch is equipped with a Caterpillar Diesel engine coupled to a jet pump. Three people were on board the launch at the time of the test (a normal crew for surveying).

The test was conducted between the General Mills pier ruins (38/04/50 N and 122/14/50 W) and Mare Island Strait Light 4. The test was in the limits of DPR-L123-PHP-86. The launch went from depths of 20 to 40 feet of water. The weather during the test was calm, with winds 0 to 5 kts, seas were calm and the current was slack.

The level was set up on stable pier ruins at the General Mills flour company, Vallejo, California. A level rod was held on the cabin top, over the position of the hull mounted transducer. The launch was driven towards the instrument man on the pier, stopping for dead in the water (DIW) measurements before and after each run.

The Pacific Hydrographic Party uses a speed log rather than rpm to measure vessel speed during hydrographic operations. Settlement and squat measurements were acquired for all speeds of hydrography.

Changes in transducer draft due to settlement and squat were measured at regular intervals through the range of 3 nm/hr to 10 nm/hr. These point values were plotted and connected to yield continuous speed versus draft correction curves.

Settlement and squat corrections are not applied to the field sheet, but are incorporated on the TC/TI tapes. ~~Static correctors were applied to the smooth sheet~~

For predicted tide correctors for each item investigated, refer to the Field Tide Note, ~~Appendix II (attached)~~

Correctors Applied to the Paper Plots and Expansion Sheets.

Launch 1101	Predicted tide correctors Static Draft correction
Pneumatic gage	Pneumatic gage correctors Predicted tide correctors
PHP-1 leadline	Leadline correctors Predicted tide correctors

Correctors Applied to the Final field Sheet.

Launch 1101	Predicted tide correctors Static Draft correction Sound velocity correction
Pneumatic gage	Pneumatic gage correctors Predicted tide correctors
PHP-1 leadline	Leadline correctors Predicted tide correctors

E. HYDROGRAPHIC SHEETS.

Five 1:10,000-scale field sheets, two 1:5000-scale and three 1:2500-scale expansion sheets were constructed by PHP members with program RK 201 on a Modified Transverse Mercator projection using a Houston Instruments Complot DP-3 flatbed plotter.

The expansion sheets were constructed to show better depth delineation for features on Items 166, 168 and the entrance to Brisbane Marina.

Field records were forwarded to the Pacific Marine Center, Nautical Chart Branch, Seattle, Washington, for verification and smooth plotting, as arranged by both PHP and PMC (N/MOP21), due to time constraints and the lack of a full compliment of personnel on PHP.

E. CONTROL STATIONS.

Control stations used on field examinations are:

NEW POSITION OR VERIFICATION OF OLD	STATION	LOCATION METHOD
Verified by PHP	DUMBARTON DRAWBRIDGE LIGHT, 1925	Traverse
"	DUMBARTON PG E WEST TOWER LT, 1983 TWR	"
"	KGO RADIO STATION CENTER MAST, 1982	"
Positioned by PHP	OAKLAND TRIBUNE BLDG FLAG ECC, BLDG	"
Verified by PHP	BUILDING 253, 1948	"
"	POINT SAN BRUNO, 1925	"
"	SIERRA POINT, 1851	"
"	OYSTER POINT MARINA LT 1, 1979 LIGHT	"
"	OYSTER POINT MARINA LT 2, 1979 LIGHT	"
"	COYOTE POINT YACHT HARBOR LT 1, 1980	"
"	POINT SAN MATEO, 1925	"
"	SAN FRANCISCO BAY S CH LT 14, 1983	"
"	HETCHY, 1983	"
"	RED HILL TOP, 1958 ⁴⁷	"

All stations were positioned to Third Order, Class I, or better accuracy. Geodetic computations were based on the 1927 North American Datum. For more information see the Horizontal Control Report, San Francisco Bay and San Pablo Bay, CA., OPR-L123-PHP-87 dated March, 1987 to October, 1987 (submitted to PMC for verification) and Horizontal Control Report, South San Francisco Bay, CA., OPR-L123-PHP-87, which will be submitted for verification upon completion of the project.

G. HYDROGRAPHIC POSITION CONTROL.

Electronic launch position control on these investigations were accomplished with a Motorola Mini-Ranger III ultra-high frequency transponder system in the range-range or range-azimuth configuration. Sextant-sextant methods were used as checks on the above methods.

Electronic Control Equipment.

The following electronic positioning equipment were used on this survey:

Motorola Mini-Ranger III Mobile Station Launch 1101

Mini-Ranger Console S/N 701
Transceiver (RT Console) S/N 1081

Motorola Mini-Ranger III Reference Stations

Mini Ranger Transponder, Code A S/N F3233
Mini Ranger Transponder, Code B S/N 911059
Mini Ranger Transponder, Code C S/N E2712
Mini Ranger Transponder, Code 7 S/N 4709

Position Control Equipment Operation.

Baseline calibrations for data collected on this survey were performed September 29 (DN 272) and December (DN 357) 1987 over a slope distance of 777.7 meters at Benicia, CA.

Corrector/Minimum Signal Strength

	Code A	Code B	Code C	Code 7	Applicable Dates
Date of BLC					
September 29, 1987	-2/8	0/9	+3/11	0/11	308-320
December 23, 1987	-2/9	-1/7	+3/8	-4/8	

PHP is adhering to a two to three month baseline calibration schedule. Daily critical systems checks confirm that the Mini-Ranger correctors determined from the September 29 baseline are valid for the entire survey. ✓

There were no positioning equipment failures during these investigations.

Daily Calibrations.

Critical system checks were performed once each day at a geodetic monument. All daily system checks on the Mini-Rangers and console/RT unit during this time period resulted in a variance of less than 5 meters. PHP considers these system checks a confirmation of the BLC and proper Mini-Ranger operation. ✓

Fixed aids to navigation (located to Third Order Class I standards) used for calibration were:

OYSTER POINT MARINA LT 1
OYSTER POINT MARINA LT 2
COYOTE POINT YACHT HARBOR LT 1
SAN FRANCISCO BAY S' CH LT 14

The observed distances were corrected for antenna offset and were compared with the computed slope distance to yield the observed system corrector. The observed system corrector was then compared with the BLC and required to be within 0.5 millimeters at the scale of the survey. All hydrographic data meets this requirement. ✓

The geometric configuration of the control stations and the signal strengths for all positions were good. Angles of intersection for all survey data were between 30 and 150 degrees. Signal strength was annotated on the raw data printout frequently during sounding acquisition. No data was submitted with less than minimum signal strength. ✓

There were no unusual methods of electronic control operations, and no unusual atmospheric conditions on these item investigations.

The theodolites used for range-azimuth control were Wild T-2, S/N 276812 and S/N 35797.

The EDM used for these investigations was a Kern DM 102, SN 293684.

EQUIPMENT FAILURES

There were no equipment failures.

For further information on electronic calibrations see
* Appendix V, of this report.

* Filed with the hydrographic data
H. SHORELINE.

Shoreline verification was conducted by the hydrographer for all shoreline within the search radii of the investigations. There were no changes to the shoreline.

The following stations are seaward of the shoreline:

<u>STATION</u>	<u>NUMBER</u>
OYSTER POINT MARINA LT 1, 1979 (pile) LIGHT	641
OYSTER POINT MARINA LT 2, 1979 (pile) LIGHT	642
COYOTE POINT YACHT HARBOR LT 1, 1980	643
SAN FRANCISCO BAY S CH LT 14, 1983 (pile)	645

I. CROSSLINES

When comparing the crosslines to the main scheme, there is a 100 per cent (100%) agreement of 0 to 1 ft. These discrepancies may be due to the irregular bottom and use of predicted tides in lieu of real tides. The following items contain crosslines:

<u>ITEM</u>	<u>% CROSSLINES</u>	<u>Mainscheme vs Crossline FT</u>
166	10	0
167	15	0
168	20	0
188	50	0

This comparison is considered good and meets the comparison criteria specified in Section 4.6.1 of the HYDROGRAPHIC MANUAL.

J. JUNCTIONS.

Not applicable as stated in the project instructions.

See Eval Rpt
Sect 5

K. PRIOR SURVEYS.

Not applicable as stated in the project instructions. See Section L below.

See Eval Rpt
Sect 6

L. COMPARISON WITH THE CHART.

The items on this survey were compared to chart 18651 35th ed. July 5, 1986.

See Eval Rpt
Sect 7

DANGERS TO NAVIGATION

Two Dangers to Navigation letters were written to the Commander, Eleventh Coast Guard District, concerning the submerged obstructions observed on this survey. A copy of these letters are ^{attached} included in ~~Appendix XII, Dangers To Navigation~~. A copy of these letters were also sent to the Chart Information Section, N/CG222, and Nautical Chart Branch, N/MOP21. These letters are dated 23 November 1987 and 16 December 1987.

CHART 18651

Description	Latitude	Longitude (NAD 1927)	Least Depth (MLLW)	POS
Submerged Obstruction	37/39/56.9 ⁴ N	122/22/47.2 ¹³ W	-8.0 ft	2205
			-7.0	
Submerged Obstruction	37/40/06.71 N	122/22/55.46 W	-6.6 ft	2384
			-3.0	
Submerged Obstruction	37/40/06.40 N	122/22/54.4 ³ W	-8.6 ft	2385
			-3.0	
Submerged Obstruction	37/35/00.5 ⁷⁷ N	122/14/58.2 ⁴⁵ W	46.6 ft	2723
			0	
Submerged Obstruction	37/35/00.8 ⁴⁸ N	122/14/59.4 ¹⁹ W	28.0 ft	2722
			37.3 ft	
Bridge Submerged Ruins	(end of east portion)			
from	37/30/11.53 N	122/07/15.79 W		2732
to	37/30/24.32 N	122/06/56.57 W		2737
	(end of west portion)			

In the vicinity of Item 160, two submerged obstructions were observed (refer to Dangers to Navigation Letter dated 23 November 1987) ^{attached} in ~~Appendix XII~~, at position number 2384, and 2385 on DN 311, 7 November 1987. These dangers to navigation were observed near the entrance channel to Oyster Cove and Brisbane Marinas at 37/40/06.71 N, 122/22/55.46 W, and 37/40/06.40 N, 122/22/54.4³ W with least depths of ^{3.0} -6.6 -7.0 ft and ^{3.0} -8.6 ft, respectively. Both submerged obstructions are stacked chunks of cement reinforced with rebar (rip-

rap). It is recommended that these dangers to navigation be charted at the above geographic positions.

concur

Ruins exist east and west of the main shipping channel, within the area common to where the "old" Dumbarton Bridge existed prior to its demolition in 1985. Refer to Dangers to Navigation Letter dated 16 December 1987, in ~~Appendix XII~~ ^{copy attached} and this section under AWOIS Item 51147 (188) for charting recommendations.

The harbor master, Brisbane Marina, Brisbane, CA informally requested that PHP check the controlling depths of the privately maintained entrance channel near Brisbane Marina (Sierra Point) and Oyster Point Marina at 37/40/15 N and 122/22/30 W, as local boat owners felt the charted controlling depths of 4 ft at 37/40/15 N, 122/22/30 W and 2 ft at 37/40/10 N, 122/23/00 W were in error on chart 18651 35th ed., July, 1986.

As a token of our appreciation for free moorage and use of facilities, PHP performed one centerline and two side channel lines (positions 2318-2398) in the entrance channel, while performing item investigations.

The controlling depth (using predicted tides and velocity table 1) is 7 ft throughout the entrance channel. A paper copy of the midchannel survey was submitted to the harbor master, Brisbane Marina and a cover letter dated 19 Jan 1988. A copy of this letter ~~is included in Appendix XIII.~~ ^{is attached} The Harbor master was informed that the data was preliminary information and subject to further verification.

Chart the 7-ft depth as the controlling depth.

See Eval Rpt
Sect 7.c.

ITEM INVESTIGATIONS

All charting recommendations are based on MLLW from predicted tides (for a complete list of corrections see Section D) measured in feet (ft). Elevations and depths may change when smooth tides are applied.

All times are Universal Coordinated Time (UTC).

Inverse distances were calculated from the detached position to its check position. These distances are in meters (m) and are located in the cahier under their respective day numbers.

The following method was used for circle bottom drag investigations. A 50-lb weight with a float was attached to a 100-m, 5/8-in diameter nylon line. A 10-lb weight was attached to the line 30 meters from the 50-lb weight. A 25-lb weight was attached to a second line 70 meters from the middle 10-lb weight. A 25-m tow line was attached to the

25-lb weight. Two circles were made in one direction, then the launch was pulled to the center weight to check for hangs near the center of the search. Then two circles were driven in the opposite direction and the launch was again pulled to the center weight to check for hangs. The launch speed was adjusted to ensure the weight was on the bottom. If a hang was observed during the drag, divers would investigate by diving down the hang line (see drag set up, Figure 1, ~~Appendix XIII~~).

a Hoched

Diver investigations in the entire San Francisco Bay area are difficult to perform since:

- Zero visibility water prevents divers from acquiring a full description of the submerged item being investigated. ✓
- Treachery currents (2 to 3 kts are common) preclude dive operations, especially in the south bay. There is essentially no slack current in the area around the San Mateo-Hayward and Dumbarton Highway Bridges.

CHART: 18651 35th ed. July 5, 1986

ITEM: 160

(Sheet 5
of 5)

ITEM DESCRIPTION: Submerged Piles and Dolphins

SOURCE: H-9819/79

<u>DATE</u>	<u>DN</u>	<u>POSITIONS</u>	<u>TIME</u>	<u>VESNO</u>
11/05/87	309	2041-2058	1822-1919	0651
11/06/87	310	2150-2159	1829-1859	

OIC: LT Diaz
LTJG Porta

GEODETTIC POSITION	Latitude N	Longitude W	POS
Charted:	37/40/09.00	122/22/42.80	
Search:	37/40/09.09	122/22/42.72	2041
	37/40/11.99	122/22/42.56	2150

POSITION DETERMINED BY:

Mini-Ranger (range-range, with check)

METHOD OF INVESTIGATION:

A 100-m radius circle drag was performed around the charted position of Item 160 (positions 2041-2058). At positions 2051 + 2 and 2055 + 3, stray soundings within the drag area were noted on the echogram. No significant hangs were observed on this day.

On DN 310, a 100-m radius bottom drag was performed to investigate the stray soundings mentioned above (2150-2159). Position 2150 was the center of the drag with an inverse distance of 0.3 m. No significant hangs were observed.

CHARTING RECOMMENDATION:

Delete "submerged pile" symbol from the chart.

Concur

18651 - Deleted "Subm pile" 11-3-89 P ✓

18652 Deleted " " 11-6-89 P ✓

CHART: 18651 35th ed. July 5, 1986

ITEM: 162 (Sheet 5 of 5)

ITEM DESCRIPTION: File

SOURCE: H-9819/79

<u>DATE</u>	<u>DN</u>	<u>POSITIONS</u>	<u>TIME</u>	<u>VESNO</u>
11/05/87	309	2059-2099	1948-2219	0651

OIC: LT Diaz
LTJG Porta

GEODETIC POSITION	Latitude N	Longitude W	POS
Charted: Pile	37/40/04.50	122/23/15.00 *	
"	37/40/05.00	122/23/13.54 *	
"	37/40/05.80	122/23/10.48	
"	37/40/08.50	122/23/06.90 *	
"	37/40/09.20	122/23/06.40 *	
Search:	37/40/04.77	122/23/13.54	2059
	37/40/06.05	122/23/10.48	2074
	37/40/08.40	122/23/06.26	2089

POSITION DETERMINED BY:

Mini-Ranger (range-range, with check)

METHOD OF INVESTIGATION:

The position of the five piles in the vicinity of 37/40/06.8 N, 122/23/03.4 W were scaled from the chart. Three 100-m radius bottom drags were required to cover the 30-m radius area around each of the five charted piles. The inverse distances for the positions 2059, 2074, and 2089 are 2.87 m, 3.40 m, and 4.38 m respectively. In some areas, non floating aids to navigation were within the radius of the drag. The launch coxswain avoided tangling the drag line by maneuvering around them. To the best of ones ability, the coxswain continued to perform a 100-m radius circle drag.

No significant hangs were observed.

CHARTING RECOMMENDATION:

Delete charted piles listed above.

Concur

18651 - Deleted 5 different o Piles 11-3-89 P

18652 - Deleted 4 different o 11-6-89 P ✓

CHART: 18651 35th ed. July 5, 1986

ITEM: 166 (Sheet 1045)

ITEM DESCRIPTION: Discontinued spoil area

SOURCE: H-9952/81-82

<u>DATE</u>	<u>DN</u>	<u>POSITIONS</u>	<u>TIME</u>	<u>VESNO</u>
11/06/87	310	2229-2317	2121-2256	0651
11/07/87	311	2399-2496	1845-2141	

OIC: LT Diaz
LTJB Porta

<u>GEODETTIC POSITION</u>	<u>Latitude N</u>	<u>Longitude W</u>	<u>POS</u>
Charted:	37/39/00.94	122/22/24	
Observed: 5 (10.2 ft Least depth)	37/39/13.2	122/21/50.19	2496

POSITION DETERMINED BY:

Mini-Ranger (range-range, with check)

METHOD OF INVESTIGATION:

Forty-five-meter spaced lines were performed (positions 2229-2450) to develop the "discontinued spoil area" at the above charted location. Two crosslines (positions 2451-2470) were performed to check the mainscheme lines. A shoal was observed at position 2441 + 2.5. A 10-m spaced development (pos 2471-2496) was performed to delineate the extent of this shoal. A lead line least depth and bottom sample (Brk sh, sand) were acquired at position 2496 at the above location. The least depth is 10.2 ft in approximately 12 to 13 ft of water.

No indication of spoil area was observed. Comparison with the chart is excellent in the area. One hundred percent (100%) of the soundings agree within 1 ft.

CHARTING RECOMMENDATION:

Delete "discontinued spoil area" from charted position. CONCUR

Chart 10-ft least depth at the observed position. CONCUR

Survey depths supersede all prior surveys and charted depths in the area. CONCUR

POS
2496

CARTO-CODE
126

Already done in 12/88 P

18652 Deleted Spoil Area 11-6-88 P

CHART: 18651 35th ed. July 5, 1986

ITEM: 167 (Sheet 5.85)

ITEM DESCRIPTION: Discontinued spoil area

SOURCE: H-9952/81-82

<u>DATE</u>	<u>DN</u>	<u>POSITIONS</u>	<u>TIME</u>	<u>VESNO</u>
11/06/87	310	2160-2228	1923-2052	0651

DIC: LT Diaz
LTJG Porta

GEODETIC POSITION	Latitude N	Longitude W	POS
Charted:	37/39/54.00	122/22/30.00	
Observed:	37/39/56.94	122/22/47.13	2205
(-8.0 ft subm obstruction)			

POSITION DETERMINED BY:

Mini-Ranger (range-range, with check)

METHOD OF INVESTIGATION:

Forty-five-meter spaced lines were performed to develop the "discontinued spoil area" at the above charted location. No indication of the spoil area was observed. Comparison with the chart is excellent in the area. One hundred percent (100%) of the soundings agree within 1 ft.

A dangers to navigation was observed at position 2205 at the location above which was in the area of investigation. The obstruction was positioned with three lines of position (LOP) with the launch, and having an inverse distance of 1.78 m. The obstruction has a least depth of -8.0 ft. The obstruction is described as awash at MHHW, and stacked chunks of cement reinforced with rebar (rip-rap). A Dangers to Navigation Letter, dated 23 November 1987, was sent to the Eleventh Coast Guard District, Long Beach, CA (refer to Appendix XII of this report).

CHARTING RECOMMENDATION:

Delete "discontinued spoil area" from the above charted position. Concur

Chart ~~submerged~~ obstruction at the observed position. Concur

POS
2205

CARTO-CODE
284

Already done in 12/88 JP

18652 - Deleted Spoil rap 1968 11-6 80 JP ✓

CHART: 18651 35th ed. July 5, 1986

ITEM: 168 (Sheet 2 of 5)

ITEM DESCRIPTION: 10 ft shoal

SOURCE: H-9872/80

DATE	DN	POSITIONS	TIME	VESNO
11/07/87	311	2497-2537	2240-2306	0651
11/08/87	312	2538-2676	1805-2129	

REFERENCES:

See the letter from Michael Lind, Vice President, Jerico Dredging, showing the limits of a borrow area, Appendix XIII of this report.

OIC: LT Diaz
LTJG Porta

GEODETIC POSITION	Latitude N	Longitude W	POS
Charted:	37/37/43.30	122/15/34.30	
Observed:	37/37/43.69	122/15/34.41	2676
(9.5 ft least depth)			

POSITION DETERMINED BY:

Mini-Ranger (range-range, with check)

METHOD OF INVESTIGATION:

Forty-five-meter spaced lines were performed to develop the 10-ft sounding at the above charted location. A crossline (positions 2552-2562) was performed to check the mainscheme.

The shoal sounding was observed throughout the entire 45-m spaced development. A 10-m spaced development (positions 2563-2675) was performed to delineate the extent of the 10-ft sounding in approximately 14 to 18 ft of water. A lead line least depth of 9.5⁷ ft and bottom sample (Brk Sh, M, S) were performed (position 2676) having a marginal, but acceptable, inverse distance of 5.0 m. An echo sounder least depth of 8.0² ft (MLLW) was observed at position 2604 + 2 at the same geographic position.

One hundred percent (100%) of the soundings agree within 1 ft when compared to the chart.

On DN 313, while performing sounding operations in the area of Item 168, a dredge from Jerico Dredging Inc., Petaluma CA, was observed conducting dredging operations near the location of Item 168 as referenced above.

, copy attached,

A letter (dated 01 Dec 1987) and chartlet, showing the limits of dredging, were submitted to PHP from Jerico Dredging. The area lies about 1.0 nautical mile southeast of Item 168 at about 37/37/00 N, 122/13/00 W. A phone conversation with Mr. Jerry Morris (Jerico Dredging) verified that dredging occurs in the area about two days per week and that dredging has occurred in the vicinity of Item 168 in the past.

CHARTING RECOMMENDATION:

Survey soundings to supersede all prior surveys and charted depths. concur

Chart 9-ft sounding at above observed position. concur

(see attached letter)

Chart "borrow area" outline on chart 18651, centered at 37/37/00 N and 122/13/00 W. Do not concur

Retain charted Note B

POS
2676

CARTO-CODE
126

X Already done in 12/88 P

18652 - NC

CHART: 18651 35th ed. July 5, 1986

ITEM: 169 (Sheet 3 of 5)

ITEM DESCRIPTION: 34 to 35 ft depths in 47 ft of water south of the San Mateo Hayward Bridge in the main shipping channel.

SOURCE: H-9984/81-83

DATE	DN	POSITIONS	TIME	VESNO
11/09/87	313	2717-2720	2149-2231	0651
11/10/87	314	2722-2723	1923-2152	

OIC: LT Diaz
LTJG Porta

GEODETIC POSITION	Latitude N	Longitude W	POS
Charted:	37/35/00.48	122/15/00.00	
Search:	37/35/01.50	122/14/57.80	2717
	37/35/00.94	122/15/00.82	2720
Observed: 8.4			
(37.3 ft obstr)	37/35/00.49 ⁸	122/14/58.19	2722
(46.8 ft obstr)	37/35/00.79 ⁷	122/14/59.45	2723

POSITION DETERMINED BY:

Mini-Ranger (range-range, range-az with check)

METHOD OF INVESTIGATION:

Two 100-m radius circle bottom drags were performed on DN 313 with centers at positions 2717 and 2720. The inverse distances are 2.57 and 1.29 m, respectively. Significant hangs were observed this day, however wind and sea conditions precluded dive operations. On DN 314, the searches were repeated. A significant snag (position 2722) was observed. Divers dove on the hang line to determine composition and extent of the hang. The divers acquired a least depth of 37.3 ft (MLLW) with a calibrated pneumatic gauge. This hang was positioned with the launch directly over the hang (hang line was straight up and down). The inverse was computed to be 3.9 m.

Position 2722 was described by divers as a mound of debris consisting of chunks of cement and metal scraps.

From the second circle drag (position 2720), three hangs were observed, all followed by dives. The first two hangs were insignificant. The third hang was significant (position 2723). Divers (as with position 2722) dove on the hang line to determine extent and least depth of hang. The least depth was acquired with pneumatic gauge and a detached position performed simultaneously. The least depth was 46.8 ft. The inverse distance to the check position was 0.0 m. The hang

was described by divers as a mound of cement, reinforced with rebar, protruding about 3 ft off the bottom.

Due to poor underwater visibility and strong currents it was difficult for divers to give a full description of the submerged obstructions.

Attached with this report are excerpts from the descriptive report (H-9984), preprocessing critique dated 20 July 1983 and a memo from PHP to N/MOP21 dated 11 August 1983 all concerning this item (see Appendix XIII of this report).

CHARTING RECOMMENDATION:

(38.4 ft)

Chart submerged obstruction (position 2722) with least depth *concur* at the above observed position.

(46.3 ft)

Chart submerged obstruction with least depth at position 2723. *concur*

✓ Delete "Shoaling Rep 1983" from above charted position. *concur*

POS
2722
2723

CARTO-CODE
272
272

18651 - Deleted *Shoaling rep* (1983) 11-3-89 *P*

↓ Already done in 12/88 *P*

18652 - Reverse Subm Obstr to Subm Obstr 11-6-89 *P*

CHART: 18651 35th ed. July 5, 1986

ITEM: 170 (Sheet 3 of 5)

ITEM DESCRIPTION: Holiday on north side of the San Mateo
Hayward Bridge.

SOURCE: H-9984/81-83

<u>DATE</u>	<u>DN</u>	<u>POSITIONS</u>	<u>TIME</u>	<u>VESNO</u>
11/09/87	313	2676-2716	2040-2107	0651

OIC: LT Diaz
LTJG Porta

GEODETTIC POSITION	Latitude N	Longitude W	POS
Charted:	37/35/00	122/15/06	

POSITION DETERMINED BY:

Mini-Ranger (range-range)

METHOD OF INVESTIGATION:

Three lines, visually spaced at 50, 100, and 150 m from the north side of the San Mateo-Hayward Bridge (with the aid of a 620 Range Finder) were performed. The holiday was filled in and compared to H-9984. Comparison with the prior survey and chart are excellent. One hundred percent (100 %) of the soundings agree within 1 ft in the junction area and charted area.

CHARTING RECOMMENDATION:

Survey depths to ^{supplement} ~~supersede~~ the prior surveys and charted soundings in the area.

Revise chart with these soundings.

Concur

Already done in 12/88. P

18652-NC

CHART: 18651 35th ed. July 5, 1986

ITEM: AWOIS 50781 (Sheet 5 of 5)

ITEM DESCRIPTION: Submerged Dolphin

SOURCE: H-9819/79

<u>DATE</u>	<u>DN</u>	<u>POSITIONS</u>	<u>TIME</u>	<u>VESNO</u>
11/04/87	308	2001-2023	1808-2038	0651

OIC: LT Diaz
LTJG Porta

GEODETTIC POSITION	Latitude N	Longitude W	POS
Charted:	37/40/17.50	122/22/11.00	
Search:	37/40/17.55	122/22/11.23	2014

POSITION DETERMINED BY:

Mini-Ranger (range-range with check)

METHOD OF INVESTIGATION:

A 100-m radius bottom circle drag was performed with the center weight dropped at the charted position of the item (position 2014). Due to poor range-range geometry, positions 2001-2013 and 2015-2023 were rejected. These positions were the circular area swept by the drag. Position 2014 had four lines of position (LOP), a 3.3-m inverse, therefore making the center position of the drag acceptable. The 100-m drag can be performed without control once the center position has been established.

No significant hangs were observed. Sea and weather conditions were excellent.

CHARTING RECOMMENDATION:

- ✓ Delete the submerged dolphin symbol from the chart.
- ✓ Revise the AWOIS listing as disproved.

concur

concur

Already done in 12/88 P

18652 - Deleted o Subndol 11-6-89 P

CHART: 18651 35th ed. July 5, 1986

ITEM: AWOIS 50782

(Sheet 5.05)

ITEM DESCRIPTION: *Pile, submerged*

SOURCE: H-9819/79

<u>DATE</u>	<u>DN</u>	<u>POSITIONS</u>	<u>TIME</u>	<u>VESNO</u>
11/04/87	308	2024-2040	2039-2141	0651

OIC: LT Diaz
LTJG Porta

GEODETIC POSITION	Latitude N	Longitude W	POS
Charted:	37/40/15.00	122/22/23.00	
Search:	37/40/14.98	122/22/23.09	2024

POSITION DETERMINED BY:

Mini-Ranger (range-range with check)

METHOD OF INVESTIGATION:

A 100-m radius bottom circle drag was performed with the center weight dropped at the charted position of the item (position 2024). Position 2024 had three lines of position (LOP), resulting in a marginal 7.8-m inverse. The 100-m drag was 25 m longer than required by the project instructions so the area of interest was fully covered by the drag.

No significant hangs were observed. Sea and weather conditions were excellent.

CHARTING RECOMMENDATION:

Submerged
Delete the "Pile" symbol from the chart.

concur

Revise the AWOIS listing as disproved.

concur

↓ Already done in 12/88 *D*

18652 - Deleted - Subm Piles 11-6-89 *D*

(Sheet 4.05)

CHART: 18651 35th ed. July 5, 1986 ITEM: AWOIS 51147, 188

ITEM DESCRIPTION: Obstructions from demolition of Dumbarton bridge.

SOURCE: H-10132/84-85

DATE	DN	POSITIONS	TIME	VESNO
11/11/87	315	2724-2742	1826-2104	0651
11/12/87	316	2745-2749	2112-2338	0651-0654
11/16/87	320	2752-2764	1901-2326	0651

OIC: LT Diaz
LTJG Porta

GEODETTIC POSITION	Latitude N	Longitude W	POS
Charted:	37/30/16.70	122/07/07.32	
Search:	37/30/15.74	122/07/06.83	2745
	37/30/20.80	122/07/01.18	2753
Observed:			
(old bridge limit)	37/30/11.53 ²	122/07/15.79	2732
(old bridge limit)	37/30/24.37	122/06/56.57	2737
*(bridge fender)	37/30/19.65 ³	122/07/03.54 ²	2733
*(bridge fender)	37/30/21.14 ⁰	122/07/05.02 ³	2734
*(bridge fender)	37/30/21.84 ⁰	122/07/00.27 ⁸	2735
*(bridge fender)	37/30/23.29 ⁸	122/07/01.78 ⁸⁰	2736
(28.2ft obstr)	37/30/16.84	122/07/02.88	2752
(27.4ft obstr)	37/30/22.85 ²	122/06/59.94 ⁴	2755

*These also position a "red" fender light at the north and south ends of the east and west fenders of the new Dumbarton Bridge.

POSITION DETERMINED BY:

Mini-Ranger (range-range, range-azimuth) and sextant-sextant checks

METHOD OF INVESTIGATION:

AWOIS Item 51147 required much planning and time consuming methods to conduct a full investigation of the common area to determine, verify, and prove existence of any bottom debris.

On DN 315, PHP performed three controlled reconnaissance sounding lines from the east bridge extension to the west bridge extension (now both fishing piers) which are the only visible remains of the old Dumbarton Bridge. The reconnaissance lines (positions 2724-2731) showed evidence of a very irregular bottom. The new Dumbarton Highway Bridge was built just north of the location of the old bridge. (See photographs in Appendix XIII). The west and east extensions of the old bridge were positioned (positions 2732 and 2737)

using range-azimuth with a visual check. Positions 2732 and 2737 have inverse checks of 3.8 and 1.0 m, respectively.

The east and west fenders and lights (located at the north and south ends of the fenders) of the new Dumbarton Highway Bridge were positioned (positions 2733-2736) with a range-azimuth and visual check. All inverse distances were less than 5 m, therefore acceptable for a 1:10000-scale survey.

The AWOIS survey requirement called for a 75-m minimum radius wire drag, for a 26.5-ft obstruction at 37°30'16.70" N, 122°07'07.32" W. Since PHP had limitations of resources and personnel, the hydrographers decided that a two-boat wire bottom drag operation would not be as advantageous, in this location (close to the bridge tiers), as a 100-m radius circle bottom drag which requires one boat. The center of the drag was at position 2745, the GP is listed above.

No significant hangs were observed at this location.

The survey requirements for AWOIS 51147 required a wire drag to be performed in the area common to the position of the old Dumbarton bridge that was demolished and to ensure all debris had been removed.

A bottom wire drag, covering approximately a 120-m swath (see Figure 2, Appendix XIII), was performed on DN 316 with the Launch 1101 (EDP 0654) and the Boston Whaler (EDP 0654). The operation was difficult and cumbersome with the limited resources and personnel available. The drag went from the east fender of the old bridge to about 100 m beyond the west fender of the new bridge (positions 2745-2749). On the first pass the drag hung hard on the bottom. Divers went down the hang line in the usual treacherous, strong currents and 0 ft visibility water to encounter hard, jagged and sharp rubble protruding about 4 ft off the bottom. The divers had to return to the surface as one of the diver's dry suit inflator valve malfunctioned. This concluded dive operations for this day. No least depth was measured due to the malfunction. The wire was hung and wrapped so hard that it had to be cut loose. Most of the drag apparatus was lost on this day. A marker buoy and line were attached to wire that was hung on the obstruction.

On DN 320, Launch 1101 returned to the location of the last hang from DN 316, position 2750 (rejected), to discover the marker buoy had disappeared. A 30-m radius bottom circle drag (same basic configuration as 100-m radius circle drag), with center position at 2751 (rejected), was performed using the same Mini Ranger rates from position 2750. Operating in strong currents, a hang was observed at position 2752. This was the same hang encountered on DN 316, position 2750. Divers went down the hang line to determine extent and composition of hang. A least depth, using a calibrated

pneumatic gauge and a detached position were observed. The least depth of the obstruction was computed to be 28.2 ft (MLLW). The obstruction was described as two wooden pilings and a mound of sharp, jagged metal debris, protruding about 3-4 ft off the bottom.

A 100-m radius bottom circle drag (center at position 2753) was performed to drag the area of the main ship channel common to the area of the old Dumbarton bridge, just slightly south of the east and west bridge fenders of the new Dumbarton bridge. No significant hangs were observed.

The entire area of the ship channel common to the old bridge was bottom dragged. No debris exists within the main ship channel.

A hang was observed east of the main ship channel at position 2755 and common to area of the old bridge. Divers went down the hang line, to determine extent and composition of the hang. A least depth and detached position were observed. The least depth was acquired with a pneumatic gauge and computed to be 28.2 ft (MLLW). The launch positioned itself over the hang to acquire a range-range and range-azimuth check. The inverse distance is 1.0 m. The obstruction was described as a group of old pilings and dolphins (bridge ruins) protruding about 6 or 7 ft above the bottom. The drag line was wrapped so badly around the obstruction, it had to be cut. Much of the drag line was lost.

On 30 NOV 1987, Mr. Wayne Till (U.S. Coast Guard bridge section) was contacted by telephone (415-437-3514) to inform his office of our findings. See letter from U.S. Coast Guard to CALTRANS dated 05 February 1988, in ~~Appendix XIII~~ attached.

A Dangers to Navigation Letter, dated 16 Dec 1987, was submitted to the 11th USCG concerning these findings near the Dumbarton bridge. A copy of this letter is attached ~~(Appendix XII)~~.

CHARTING RECOMMENDATION:

Chart submerged obstructions and least depths described by ~~concur~~ positions 2752 and 2755.

Chart the bridge fenders and lights for the new Dumbarton ~~concur~~ Highway Bridge. See Section N for GPs.

Chart the submerged ruins area between positions 2732 and 2737, except for the area ~~between~~ ^{across} the main ship channel, common to the old Dumbarton Bridge (refer to the Dangers to Navigation Letter dated 16 Dec 1987, ~~Appendix XII~~). ~~See Smoothesheet for area limits.~~ ~~Appendix XII~~ ^{concur}

The circle drag performed at position 2745, although no significant hangs were observed, the area of the drag area

lies within the submerged ruins area mentioned above. Chart concu-
this area the same as above.

Chart the fishing piers extending 12 m and 140 degrees T from concu-
the east and west extensions of the old Dumbarton Bridge (see
positions 2732 and 2737).

<u>POS</u>	<u>CARTO-CODE</u>
2732	057
2733-2736	200, 425
2737	057
2752	272
2755	272

Already done in 12/88. @

18652 - NC

M. ADEQUACY OF SURVEY.

These investigations are complete and adequate to supersede concur all prior charted and item information.

See Section A of this report, for a discussion of the items which were not completed.

N. AIDS TO NAVIGATION. See Eval Rpt Sect 7.d.

Non Floating Aids to Navigation

There were no floating aids to navigation with the areas of concur these investigations.

The following fixed aids to navigation were used for calibrations and were positioned (verified) to Third Order, Class I accuracy (See Horizontal Control Report, South San Francisco Bay, CA., OPR-L123-PHP-87). The only exceptions were the Dumbarton Bridge fender lights which were established in early 1986 and positioned using hydrographic methods. Comparisons of the field positions of the fixed aids to navigation were performed to the U. S. Coast Guard Light List, Volume VI, 1988, and the September, 1986 DIPFILE Listing for fixed aids to navigation (most recent Dipfile Listing for Chart 18651 available to PHP).

The names for South San Francisco Yacht Harbor Light 1 and 2 were changed to Oyster Point Marina Light 1 and 2, respectfully to reflect the names used by local mariners and by the Light List (numbers 5100 and 5105). These changes will be reflected on the Horizontal Control Report, which will shortly follow this report.

OYSTER POINT MARINA LIGHT 1 (formerly S SF YCHT HBR LT 1)

	<u>Lat N</u>	<u>Long W</u>	<u>INV (m)</u>
Field position	37/39/50.908	122/22/05.098	
Light List #5100	37/39.9	122/22.1	97.87
DIPFILE	37/39/50.908	122/22/05.098	0.015

OYSTER POINT MARINA LIGHT 2 (formerly S SF YCHT HBR LT 2)

	<u>Lat N</u>	<u>Long W</u>	<u>INV (m)</u>
Field position	37/39/52.110	122/22/05.186	
Light List #5105	none		-
DIPFILE	37/39/52.109	122/22/05.186	0.015

COYOTE POINT YACHT HARB LT 1

	<u>Lat N</u>	<u>Long W</u>	<u>INV (m)</u>
Field position	37/35/36.724	122/18/41.294	
Light List #5140	37/35.6	122/18.7	28.263
DIPFILE	37/35/36.726	122/18/41.302	0.200

SAN FRANCISCO BAY S CH LT 14

	<u>Lat N</u>	<u>Long W</u>	<u>INV (m)</u>
Field position	37/30/49.716	122/08/01.872	
*Light List #5270	37/30.8	122/08.0	70.11
DIPFILE	none		-

DUMBARTON BRIDGE W FENDER S LT (RED)

Pos 2733

	<u>Lat N</u>	<u>Long W</u>	<u>INV (m)</u>
Field position	37/30/19.65	122/07/03.51	
Light List	none		-
DIPFILE	none		-

DUMBARTON BRIDGE W FENDER N LT (RED)

Pos 2734

	<u>Lat N</u>	<u>Long W</u>	<u>INV (m)</u>
Field position	37/30/21.11	122/07/05.02	
Light List	none		-
DIPFILE	none		-

DUMBARTON BRIDGE E FENDER S LT (RED)

Pos 2735

	<u>Lat N</u>	<u>Long W</u>	<u>INV (m)</u>
Field position	37/30/21.81	122/07/00.27	
Light List	none		-
DIPFILE	none		-

DUMBARTON BRIDGE E FENDER N LT (RED)

Pos 2736

	<u>Lat N</u>	<u>Long W</u>	<u>INV (m)</u>
Field position	37/30/23.29	122/07/01.78	
Light List	none		-
DIPFILE	none		-

*The characteristic and geographic position for "San Francisco S Ch LT 14" is listed as "Redwood Creek LT 14" (Light List #5270). Refer to letter to Eleventh Coast Guard District dated 03 February 1988, ~~Appendix XIII.~~
copy attached

NOAA Form 76-40 has been attached. ~~in Appendix X.~~

Q. STATISTICS.

Vessel: Launch 1101, EDP 0651
 Number of Positions: 764
 N. miles of Sounding Lines: 54.0
 Square nm of Hydrography: 2.0
 Detached positions: 28
 Number of tide gages: 2 (POG gages: 2. See Field Tide Note.)
 Days of production: 15

P. MISCELLANEOUS.

There were no anomalous currents, tides, or submarine features in the areas of investigation.

Two bottom samples were acquired, but not sent to the Smithsonian Institute, because it was not required by the project instructions. Bottom samples (pos 2496, 2676) were taken at the hydrographers discretion to determine the bottom configuration of the feature being investigated. ✓

Q. RECOMMENDATIONS.

Refer to sections L, M, and N for individual recommendations. See Eval Rpt
Sect 9

R. AUTOMATED DATA PROCESSING.

DEC PDP 8/e Computer

<u>Number</u>	<u>Name</u>	<u>Version</u>	<u>Date</u>
RK201	Grid, Signal, and Lattice Plot	4/18/75	
RK221	Range-Range Non-Real Time Plot	7/25/86	
RK226	Range-Azimuth Non-Real Time Plot	7/25/86	
RK300	Utility Computations	10/21/80	
RK330	Reformat and Data Check	5/04/76	
RK360	Electronic Corrector Abstract	2/02/76	
RK362	Reformat and Data Check and Elinore-Line Oriented Generator	8/20/84	
AM500	Predicted Tide Generator	11/10/72	
RK561	H/R Geodetic Calibration	12/01/82	

Hewlett Packard 9815A Calculator.

<u>Number</u>	<u>Name</u>	<u>Version</u>	<u>Date</u>
811101	Geodetic Package	Feb. 1985	

 ✓

Hewlett Packard 97 Calculator.

<u>Number</u>	<u>Name</u>	<u>Version</u>	<u>Date</u>
	Geodetic Inverse		

IBM PC

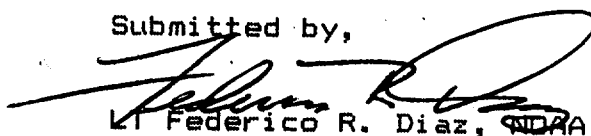
<u>Number</u>	<u>Name</u>	<u>Version</u>	<u>Date</u>
MTEN	Micro - Terminal Entry Command	Nov. 1984	

S. REFERRAL TO REPORTS.

Other reports covering this survey area are:

- 1) Horizontal Control Report, South San Francisco Bay, CA.,
OPR-L123-PHP-87 (the report will be submitted at a later date).
- 2) Horizontal Control Report, San Francisco Bay and San
Pablo Bay, CA., OPR-L123-PHP-87 dated March, 1987 to October,
1987 (submitted to PMC for verification)

Submitted by,



Lt Federico R. Diaz, NOAA
CHIEF

PACIFIC HYDROGRAPHIC PARTY
NATIONAL OCEAN SERVICE (NOS)

FIELD TIDE NOTE

OPR-L123-PHP-87
FIELD EXAMINATION
San Francisco Bay, California (Items)
PHP-10-4-87
Chart 18651

Reductions

Soundings on the field sheet were reduced on the basis of predicted tides for San Francisco, (Golden Gate, Presidio) Fort Point, Calif., station number 941-4290. Tide correctors were generated at 0.2 ft intervals using the PDP-8e computer system and program AM 500 "Predicted Tide Generator".

Stations

Three permanent tide stations bracket the survey area. These three stations are operated by NOAA, Pacific Operations Group, N/OMA 1214. The gage at San Francisco, Fort Point 941-4290 is to the northwest of the survey area, Alameda (Alameda NAS) 941-4750 is to the north, and San Mateo Fishing Pier 941-4458 is to the west northwest. San Mateo Fishing Pier was not required by the project instructions, but may prove helpful in real tide reductions. Frequent checks with POG confirmed that there were no significant breaks in the data from these stations. There were no breaks at Alameda (941-4750). Fort Point (941-4290) was down from 29 May to 3 June and again from 14 July to 16 July. Since there are backup gages at this site there should be no problem with data reduction. These sites were leveled by Pacific Operations Group in October. There were no other problems.

No tide stations were installed or operated by PHP during these item investigations.

Tide Zone Correctors

Predicted tides from the San Francisco, Fort Point tide gage were adjusted by the application of correctors supplied by NOAA, Office of Oceanography and Marine Assistance, Sea and Lake Levels Branch, Rockville, Md (N/OMA 121). These correctors accompany project instructions OPR-L123-PHP-87, dated 10 Feb. 1987.

The correctors used for this Field Exam Survey are as follows:

ITEMS No. 160, 162, 166, 167
AWIOS 50781, and 50782

+ 0 hr. 41 min. High Water
+ 1 hr. 00 min. Low Water
X 1.29 Height Ratio

ITEM No. 168

+ 0 hr. 48 min. High Water
+ 1 hr. 16 min. Low Water
X 1.36 Height Ratio

ITEM No. 169, 170


+ 0 hr. 43 min. High Water
+ 1 hr. 13 min. Low Water
X 1.41 Height Ratio

AWOIS 51147

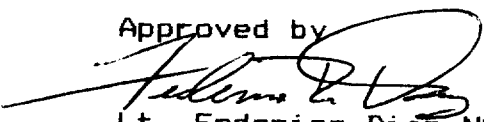
+ 1 hr. 00 min. High Water
+ 1 hr. 40 min. Low Water
X 1.61 Height Ratio

No survey data was acquired without the required tide support.
Pacific Standard Time (120 W.) was used at the permanent
stations operated by POG N/OMA 1214.

Submitted by


Bruce H. Lund
Eng. Tech.

Approved by


Lt. Federico Diaz, NOAA
Chief, PHP (N/MOP223)

SIGNAL TAPE LISTING

401	0	37	45	10565	122	27	05024	139	0000	000000	MT SUTRO TV TOWER N ANTENNA
402	0	37	45	18578	122	07	05023	139	0000	000000	MT SUTRO TV TOWER S ANTENNA
403	0	37	45	19077	122	27	06095	139	0000	000000	MT SUTRO TV TOWER W ANTENNA
404	0	37	47	59626	122	15	42892	139	0000	000000	OAKLAND ALAMEDA CO CTHSE FP
405	0	37	46	44253	122	12	46237	139	0050	000000	WARD 1947
406	0	37	47	40195	122	16	34215	139	0000	000000	JACK LONDON SQ FLAGPOLE
407	0	37	48	28403	122	11	52784	139	0000	000000	OAKLAND MORMON TEMPLE SPIRE
408	0	37	48	28021	122	19	11606	139	0000	000000	OAKLAND NAVY DEPOT CHECK TK
412	0	37	47	42826	122	24	06079	139	0264	000000	TRANS AMERICA BUILDING
415	0	37	52	19650	122	15	24221	139	0000	000000	CAMPANILE UNIVERSITY OF CALIF
421	0	37	46	06895	122	18	34818	139	0007	000000	ALAMEDA NAS W BREAKWATER E LT
422	0	37	30	13146	122	07	20207	139	0000	000000	DUMBARTON PG E WEST TOWER LT
423	0	37	29	51518	122	06	31065	139	0000	000000	DUMBARTON DRAWBRIDGE LIGHT
424	0	37	31	34352	122	06	01838	139	0000	000000	KGO RADIO STATION CENTER MAST
604	0	37	53	47366	122	21	16177	250	0048	000000	BROOKS ISLAND 2 1905
605	0	37	54	34400	122	21	34121	250	0002	000000	HARBOR USE 1929
606	0	37	46	55688	122	15	04361	250	0002	000000	VET 1
607	0	37	48	11576	122	16	11226	139	0109	000000	OAKLAND TRIBUNE BLDG FLAGPOLE
608	0	37	48	06462	122	21	40177	250	0029	000000	YERBA BUENA LIGHTHOUSE
609	0	37	47	06646	122	18	04118	250	0003	000000	CHAN
610	0	37	47	09600	122	15	07804	250	0003	000000	9TH AVE
611	0	37	45	54676	122	12	50885	139	0000	000000	OAKLAND PG AND E GASHOLDER
612	0	37	48	11504	122	16	11245	250	0109	000000	OAKLAND TRIBUNE BLDG FLAG ECC

~~613 0 37 46 30047 122 14 31590 250 0003 000000 SONHO~~
~~614 0 37 54 08978 122 21 35718 250 0006 000000 POINT PETRERO RCH RNO E LT~~
~~616 0 37 47 02222 122 14 50935 250 0002 000000 VET 2~~
~~617 0 37 47 09168 122 15 26443 250 0003 000000 9TH AVE RM 1~~
~~618 0 37 49 14966 122 19 44838 250 0003 000000 MOLE 1947~~
~~619 0 37 48 50558 122 21 30637 139 0004 000000 ARMY 2 1947~~
~~620 0 37 43 36125 122 21 28488 250 0039 000000 BUILDING 253 1948~~
~~621 0 37 46 02578 122 18 25655 250 0007 000000 ALAMEDA NAS E BREAKWATER S LT~~
~~622 0 37 46 04630 122 17 56041 250 0010 000000 ALAMEDA NAS CHANNEL RNO F LT~~
~~623 0 37 46 03064 122 17 31750 139 0003 000000 ALAMEDA NAS CHANNEL RNO R LT~~
~~624 0 37 44 36414 122 15 34434 250 0003 000000 BAY FARM NW~~
~~625 0 37 44 06876 122 15 33410 250 0003 000000 BAY FARM NW RM 1~~
~~626 0 37 45 46418 122 15 08227 139 0009 000000 HOSPITAL 1947~~
~~627 0 37 45 46511 122 15 08308 139 0000 000000 HOSPITAL 1947 RM 3~~
~~628 0 37 44 58069 122 14 07210 250 0013 000000 SAN LEANDRO CHAN~~
~~629 0 37 45 36186 122 13 19302 250 0003 000000 UNIFLEX~~
~~630 0 37 45 56541 122 12 00425 139 0000 000000 OAKLAND SAFEWAY TOWER STEEPLE~~
~~631 0 37 44 56214 122 13 19641 243 0000 000000 SAN LEANDRO BAY AIRPORT DBCN 3~~
~~632 0 37 44 55519 122 13 20656 243 0000 000000 SAN LEANDRO BAY AIRPORT DBCN 4~~
~~635 0 37 43 50040 122 12 28027 243 0000 000000 OAK AP CHAN HYDRO SIGNAL~~
~~637 0 37 43 33562 122 13 21019 139 0000 000000 VORTAC OAKLAND OAK~~
~~638 0 37 42 55060 122 23 33741 139 0128 000000 BAY PARK 1932~~
639 0 37 39 12095 122 23 01817 250 0055 000000 POINT SAN BRUNO 1925
640 0 37 40 27542 122 23 33262 250 0148 000000 SIERRA POINT 1851
641 0 37 39 50908 122 22 05098 139 0000 000000 OYSTER POINT MARINA LT 1
642 0 37 39 52110 122 22 05186 139 0000 000000 OYSTER POINT MARINA LT 2
643 0 37 35 36724 122 18 41294 139 0000 000000 COYOTE POINT YACHT HARB LT 1
644 0 37 35 28848 122 19 06017 250 0013 000000 POINT SAN MATEO 1925
645 0 37 30 49716 122 08 01872 139 0000 000000 SAN FRANCISCO BAY S CH LT 14
646 0 37 30 02107 122 06 20944 250 0004 000000 HETCHY 1983
647 0 37 33 14065 122 05 36907 250 0089 000000 RED HILL TOP 1958

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

Replaces C&GS Form 367.

☐ TO BE CHARTED
☒ TO BE REVISED
☐ TO BE DELETEDREPORTING UNIT
(If field party, ship or office)
PACIFIC HYDROGRAPHIC
PARTY-NOAASTATE
CALIFORNIALOCALITY
SAN FRANCISCO BAY
(SOUTHERN PORTION)DATE
01/25/88The following objects HAVE ☐ HAVE NOT ☐ been inspected from seaward to determine their value as landmarks.
OPR PROJECT NO. JOB NUMBER SURVEY NUMBER

OPR-L123-PHP-87

FE

CHART 18651

NORTH AMERICAN DATUM 1927

POSITION

METHOD AND DATE OF LOCATION
(See instructions on reverse side)CHARTING
NAMEDESCRIPTION
(Record reason for deletion of landmark or aid to navigation.
Show triangulation station names, where applicable, in parentheses)

LATITUDE

D.M. Meters

LONGITUDE

D.P. Meters

OFFICE

FIELD

CHARTS
AFFECTED

ORIGINATING ACTIVITY

☒ HYDROGRAPHIC PARTY
☐ GEODETIC PARTY
☐ PHOTO FIELD PARTY
☐ COMPILATION ACTIVITY
☐ FINAL REVIEWER
☐ QUALITY CONTROL & REVIEW GRP.
☐ COAST PILOT BRANCH
(See reverse for responsible personnel)

LIGHT

OYSTER POINT MARINA LIGHT 1 (Formally
South SAN FRANCISCO YACHT HARBOR LIGHT
1) "FL G 4s 17ft" (name change only)

37 39

50.908

122 22

05.098

F-2-6-L

18651

"

OYSTER POINT MARINA LIGHT 2 (Formally
South SAN FRANCISCO YACHT HARBOR LIGHT
2) "FL R 4s" (name change only)

37 39

52.110

122 22

05.186

"

"

"

COYOTE POINT YACHT HARBOR LIGHT 1
"FL G 4sec 12ft."

37 35

36.724

122 18

41.294

"

"

"

SAN FRANCISCO BAY SOUTH CHANNEL LIGHT
14 "FL R 4s 15ft 4m"

37 30

49.716

122 08

01.872

"

"

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	LT Federico R. Diaz/LTJG Thomas K. Porta
POSITIONS DETERMINED AND/OR VERIFIED	ENG TECH BRUCE H. LUND (verified)
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	<input type="checkbox"/> PHOTO FIELD PARTY <input type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'	
(Consult Photogrammetric Instructions No. 64.)	
OFFICE I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	FIELD (Cont'd) B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection P - Photogrammetric Vis - Visually 5 - Field Identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75	II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.
*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.	

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

U.S. DEPARTMENT OF COMMERCE

ORIGINATING ACTIVITY

☒ TO BE CHARTED
☐ TO BE REVISED
☐ TO BE DELETEDREPORTING UNIT
(Field Party, Ship or Office)
PACIFIC HYDROGRAPHIC
PARTYSTATE
CALIFORNIALOCALITY
SAN FRANCISCO BAY
(SOUTHERN PORTION)DATE
01/29/88The following objects HAVE ☐ HAVE NOT ☐ been inspected from seaward to determine their value as landmarks.☒ HYDROGRAPHIC PARTY
☐ GEODETIC PARTY
☐ PHOTO FIELD PARTY
☐ COMPILATION ACTIVITY
☐ FINAL REVIEWER
☐ QUALITY CONTROL & REVIEW GRP.
☐ COAST PILOT BRANCH
(See reverse for responsible personnel)

OPR PROJECT NO.

JOB NUMBER

SURVEY NUMBER

DATUM

OPR-L123-PHP-87

NORTH AMERICAN DATUM 1927

METHOD AND DATE OF LOCATION
(See instructions on reverse side)CHARTING
NAMEDESCRIPTION
(Record reason for deletion of landmark or aid to navigation.
Show triangulation station names, where applicable, in parentheses)

LATITUDE

LONGITUDE

OFFICE

FIELD

CHARTS
AFFECTED

LIGHT

DUMBARTON BRIDGE W. FENDER S. LT (RED)

37 30

19.650

122 07

03.510

F-3-8-L

18651

"

" " " N. " "

37 30

21.110

122 07

05.020

"

"

"

" " E. " S. " "

37 30

21.810

122 07

00.270

"

"

"

" " " N. " "

37 30

23.290

122 07

01.780

"

"

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	PACIFIC HYDROGRAPHIC PARTY
POSITIONS DETERMINED AND/OR VERIFIED	LT FEDERICO R. DIAZ
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	<input checked="" type="checkbox"/> PHOTO FIELD PARTY <input type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify) FIELD ACTIVITY REPRESENTATIVE OFFICE ACTIVITY REPRESENTATIVE <input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION' (Consult Photogrammetric Instructions No. 64.)	
OFFICE I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	FIELD (Cont'd) B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection P - Photogrammetric Vis - Visually 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75	II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.
*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.	



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

Pacific Hydrographic Party
614 A East Fifth St.
Berkeley, CA 94510

23 November 1987

Commander (loan)
11TH Coast Guard District
Building 51, Government Island
Alameda, CA 94501

Dear Sir:

The following features were observed by the Pacific Hydrographic Party, NOS, NOAA, during a field examination of South San Francisco Bay. The features were discovered on 06 November 1987 during survey operations near Oyster Point Entrance Marina. This information, which is field data, is subject to verification, and will be used to update future editions of nautical chart 18651. It is, however, considered important enough to warrant immediate publication.

OBSTRUCTIONS

The following uncharted obstructions and hazards were found during the item investigations. The surveyed depths have been corrected to the chart datum, which is mean lower low water (MLLW), by applying predicted tides. The surveyed depths are field data and are subject to change. The geodetic positions are based on the North American Datum 1927 (NAD 1927).

CHART 18651

Description	Latitude	Longitude (NAD 1927)	Least Depth (MLLW)
Submerged Obstruction	37/39/56.90 N	122/22/47.20 W	-8.0 ft✓
Submerged Obstruction	37/40/06.71 N	122/22/55.46 W	-6.6 ft✓
Submerged Obstruction	37/40/06.40 N	122/22/54.42 W	-8.6 ft.✓

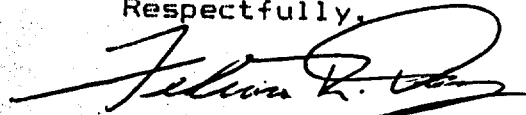
All three obstructions are awash or submerged at MHHW.

For further information concerning the above mentioned obstructions contact the Chief of Party, Pacific



Hydrographic Party-NOAA, 614 A East 5th St. Benicia, 94510.
The Chief of Party may be reached locally in Benicia at the
following phone number: 707-746-8189.

Respectfully,



Federico R. Díaz
LT NOAA
Chief of Party

cc: Chart Information Section, N/CG222
Nautical Charts Branch, N/MOP21

ITEMS
"169" AND
188



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

PACIFIC HYDROGRAPHIC PARTY
614-A East 5TH Street
Benicia, CA 94510

16 December 1987

Commander (can)
Eleventh Coast Guard District
Union Bank Building
Long Beach, CA 90822

Dear Sir:

The following features were observed by the Pacific Hydrographic Party, NOAA, National Ocean Service, during field examinations of South San Francisco Bay. The features were discovered on November 09, 11, and 16, while performing survey and dive operations near the San Mateo-Hayward Bridge and the Dumbarton Highway Bridge. This information is field data, which is subject to verification, will be used to update future editions of Chart #18651. It is, however, considered important enough to warrant immediate publication.

The following uncharted obstructions surveyed depths have been corrected to the chart datum, which is Mean Lower Low Water (MLLW), by applying predicted tides. The geographic positions are based on the North American Datum 1927 (NAD27).

While performing operations in the vicinity of the San Mateo-Hayward Bridge and the main shipping channel, two submerged obstructions with least depths of 37.3 ft. and 46.6 ft. were observed at the following geographic positions:

Lat. 037/35/00.5N	and	Lat. 037/35/00.8N
Lon. 122/14/58.2W		Lon. 122/14/59.4W

See attached chartlet #1 of Chart 18651.

Operations were performed on the 11 and 16 November 1987 in the vicinity of the "new" Dumbarton Bridge, common to the area of the "old" Dumbarton Bridge which was recently blown up. Bottom drag and dive operations proved that there is no bottom debris in the main shipping channel common to the area where the "old" Dumbarton Bridge used to exist, therefore, no obstructions exist in the main channel.

The same types of operations proved that several obstructions exist east and west of the main shipping



channel, within the area common to where the "old" Dumbarton Bridge existed.

The attached chartlet #2 of Chart 18651 shows the area of the main shipping channel and the "old" bridge clear of obstructions. East and west of the ship channel, common to the area of the "old" Dumbarton Bridge, should be charted as submerged ruins to the following geographic positions of the existing east and west bridge fenders of the "old" bridge:

West Fender
Lat. 037/30/11.5N
Lon. 122/07/15.8W

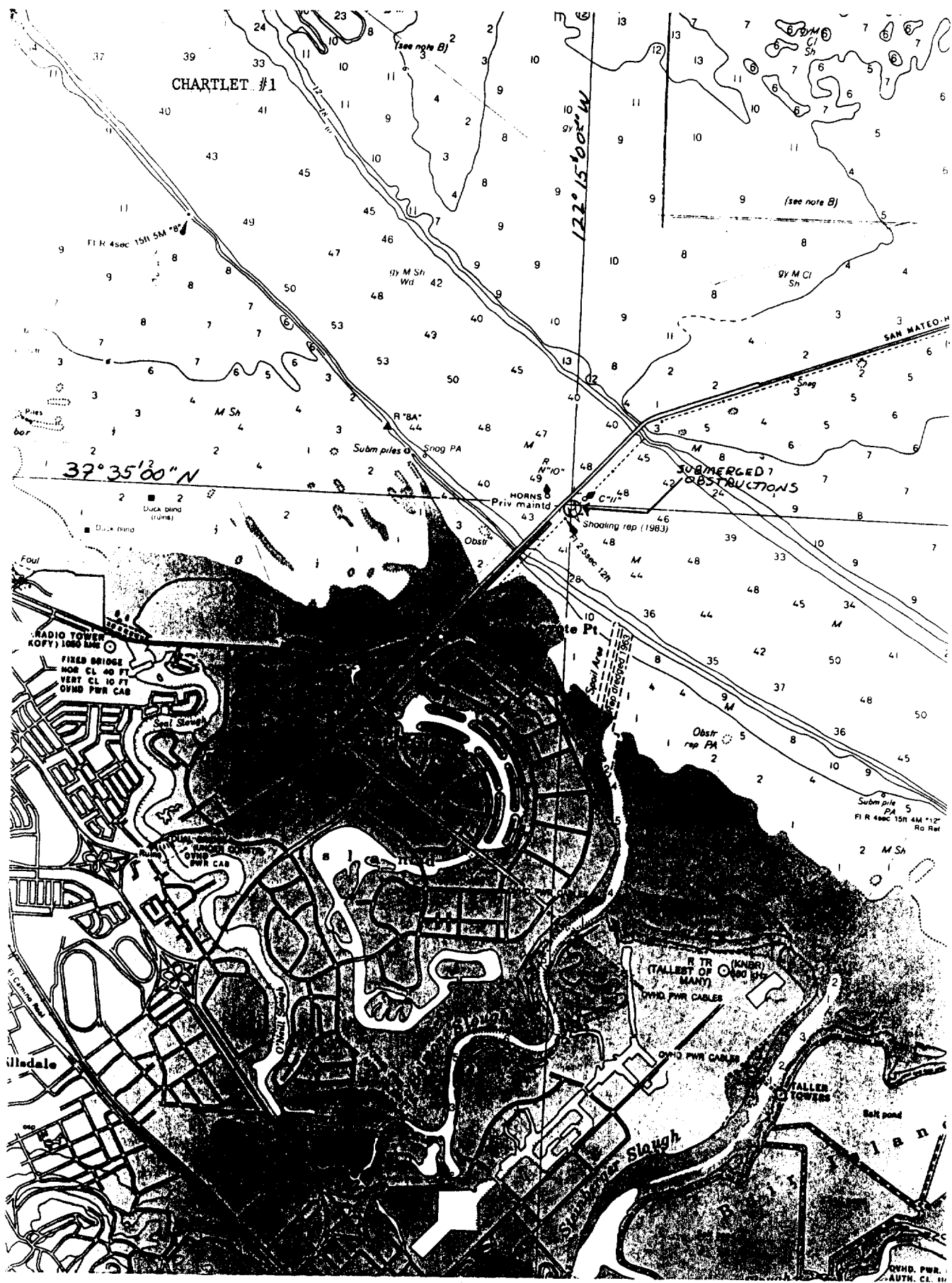
East Fender
Lat. 037/30/24.3N
Lon. 122/06/56.6W

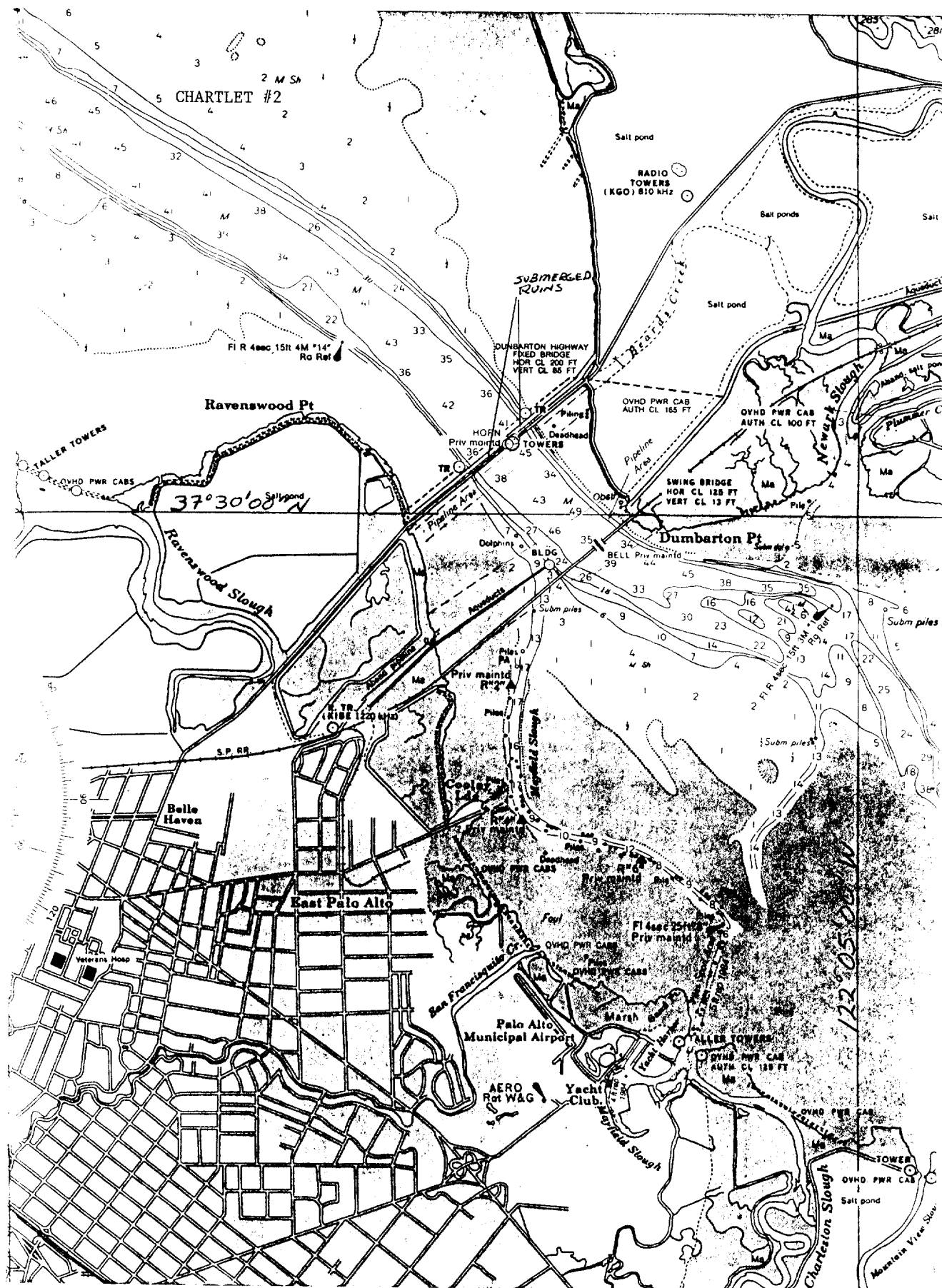
For further information concerning the above mentioned obstructions, contact the Chief of Party, Pacific Hydrographic Party-NOAA, 614-A East 5TH Street, Benicia, CA 94510. The Chief of Party may be reached at the following phone number : 707-746-8189.

Respectfully,


Federico R. Diaz
Chief, PHP

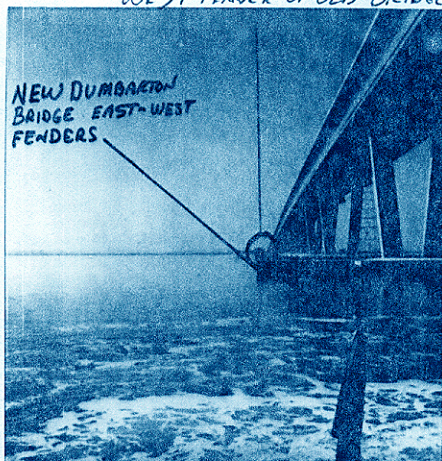
cc: Chart Information Section, N/C0222
Nautical Chart Branch, N/MOP21



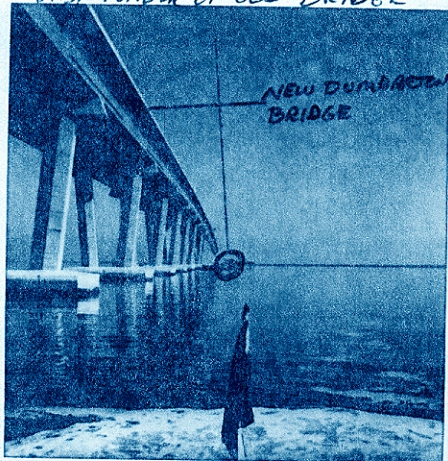


AWOIS 51147 (ITEM 188)

WEST FENDER OF OLD BRIDGE



EAST FENDER OF OLD BRIDGE



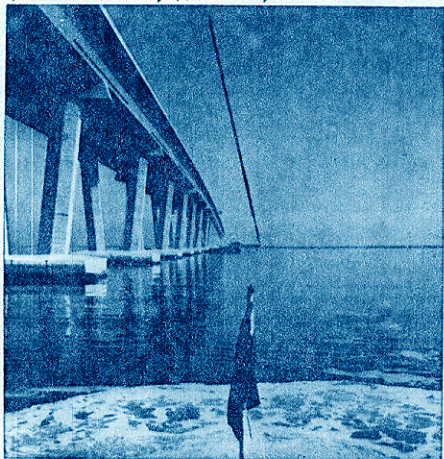
DUMBARTON BRIDGE (EAST SIDE)
Looking to western bridge fender of
"old" bridge

11/11/87

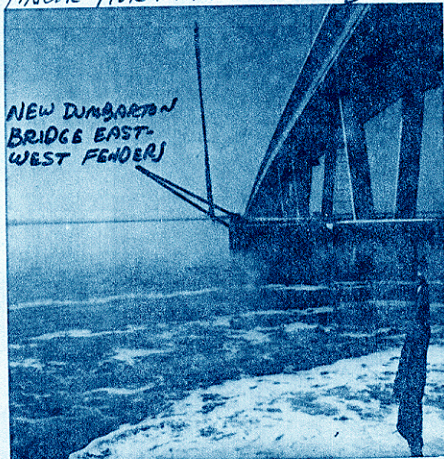
DUMBARTON BRIDGE (WEST SIDE)
Looking to eastern bridge fender of
"old" bridge

11/11/87

FINGER PIER ATTACHED TO EAST FENDER



FINGER PIER ATTACHED TO WEST FENDER



DUMBARTON BRIDGE (WEST SIDE)

DUMBARTON BRIDGE (EAST SIDE)

11/11/87



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

PACIFIC HYDROGRAPHIC PARTY
614-A East 5TH St.
Benicia, CA 94510

03 February 1987 N/MOP223:frd

COMMANDER (can)
Eleventh Coast Guard District
Union Bank Building
Long Beach, CA 90822

Dear Sir:

An error was recently discovered by the PACIFIC HYDROGRAPHIC PARTY (PHP) in the U.S. Coast Guard Light List Volume VI, 1988, Pacific Coast And Pacific Islands. The characteristics and geographic position for "Redwood Creek LT 14" (Light List number 5270) is actually "San Francisco South Channel LT 14", which is not listed in the Light List. Attached with this memo are copies of pages 57 - 58 of the Light List. PHP considered this important enough to warrant immediate notification and publication. Your cooperation in this matter is appreciated.

Respectfully,

Federico R. Díaz
Chief, PHP

cc: Chart Information Section, N/CG222
Nautical Chart Branch, N/MOP21



(1) No.	(2) Name and location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
CALIFORNIA - Eleventh District							

N/W
SAN FRANCISCO BAY - SOUTHERN PART (Chart 18651)

South Channel

5155 San Mateo-Hayward Bridge
Fog Signal

HORNS: 2 blasts ev 30s
(3s bl-3s si-3s bl-21s si).
Private aid.

5160	- Buoy 10	37 35.0 122 15.1				Red nun.	
5165	- Buoy 11	37 35.0 122 14.9				Green can.	
5170	- TOWER LIGHT	37 34.9 122 15.0	Fl W 2.5s	12		Transmission tower.	Private aid.
5175	- LIGHT 12		Fl R 4s	15	4	TR on pile.	

Higher intensity beam down
channel toward San Mateo-
Hayward Bridge.
Ra ref.

Redwood Creek

5180	- ENTRANCE LIGHT 2	37 33.2 122 11.8	Fl R 4s	15	4	TR on pile.	
5185	- ENTRANCE LIGHT 3		Fl G 4s	15	3	SG on pile.	
5190	- ENTRANCE LIGHT 4		Fl R 4s	15	4	TR on pile.	
5195	- LIGHT 5	37 32.4 122 11.5	Fl G 4s	15	3	SG on pile.	
5200	- LIGHT 6		Fl R 4s	15	4	TR on pile.	
5205	- LIGHT 8		Fl R 4s	15	3	TR on pile.	
5210	- LIGHT 7		Fl G 2.5s	15	3	SG on pile.	
5215	- LIGHT 10		Fl R 4s	15	3	TR on pile.	
5220	- LIGHT 9		Fl G 4s		3	SG on pile.	
5225	- Daybeacon 11					SG on pile.	
5230	- LIGHT 12		Fl R 6s	15	4	TR on pile.	
5235	- LIGHT 14		Fl R 4s	15	3	TR on pile.	
5240	- LIGHT 13		Fl G 2.5s	15	3	SG on pile.	
5245	- LIGHT 15		Fl G 4s	15	5	SG on dolphin.	
5250	- LIGHT 16		Fl R 6s	15	4	TR on pile.	
5255	- LIGHT 18	37 30.8 122 12.7	Fl R 4s	15	4	TR on pile.	
5260	- LIGHT 20		Fl R 4s	15	3	TR on column.	
5265	- Daybeacon 21					SG on pile.	
5270	- LIGHT 14	37 30.8 122 08.0	Fl R 4s	15	4	TR on pile.	

HORN: 1 blast ev 10s (1s bl).
Operates continuously from
Oct. 1 to Apr. 1.
Higher intensity beam upstream.
Ra ref.

Ra ref.

Ra ref.

Ra ref.

Ra ref.

Ra ref.

Ra ref.

Ra ref.

Ra ref.

Ra ref.

Ra ref.

Higher intensity beam down
channel.
Ra ref.

HORN: 1 blast ev 20s (2s bl).
Private aid.

5275 Dumbarton Highway Bridge
Fog Signal

(1) No.	(2) Name and location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
CALIFORNIA - Eleventh District							
N/W SAN FRANCISCO BAY - SOUTHERN PART (Chart 18631)							
Redwood Creek							
5280	Dumbarton Railroad Bridge Fog Signal	37 29.9 122 06.5					BELL: 1 stroke ev 20s Private aid.
Mayfield Slough							
5285	- Entrance Daybeacon 2	37 29.5 122 06.9				Pile	Private aid.
5290	- Entrance Daybeacon 4					Pile.	Private aid.
5295	- Entrance Daybeacon 6					Pile.	Private aid.
5300	- ENTRANCE LIGHT 8	37 28.1 122 05.8	Fl W 4s	25		Platform on piles	Private aid.
South Channel							
5305	- LIGHT 16		Fl R 4s	15	3	TR on pile.	Ra ref.
5310	- LIGHT 17		Fl G 4s	15	3	SG on pile.	Ra ref.
5315	- LIGHT 18		Fl R 4s	15	3	TR on pile.	Ra ref.
5320	- Daybeacon 20					TR on pile.	
Guadalupe Slough							
Buoys are located to best mark shifting channel.							
5325	- Buoy 1					Green can.	
5330	- Buoy 2					Red nun.	
5335	- Buoy 3					Green can.	
5340	- Buoy 4					Red nun.	
5345	- Buoy 6					Red nun.	
SAN FRANCISCO ENTRANCE (Chart 18649)							
San Francisco Bay							
5350	- North Channel Lighted Buoy 2	37 50.0 122 23.7	Fl R 6s		4	Red.	
5355	- North Channel Buoy 3	37 51.0 122 25.0				Green can.	
Emeryville Marina							
5360	- LIGHT 1	37 50.6 122 19.3	Fl G 2s	14		SG on pile.	Private aid.
5365	- LIGHT 2		Fl R 2s	14		TR on pile.	Private aid.
5370	- LIGHT 3	37 50.6 122 18.9	Fl G 4s	14		SG on pile.	Private aid.
5375	- LIGHT 4		Fl R 4s	14		TR on pile.	Private aid.
5380	- LIGHT 5	37 50.6 122 18.5	Fl G 4s	14		SG on pile.	Private aid.
5385	- LIGHT 6		Fl R 4s	14		TR on pile.	Private aid.
5390	- LIGHT 7	37 50.5 122 18.6	Is G 4s	17		SG on pile.	Private aid.



FEDERICO R. DIAZ
CHIEF OF PARTY
(HYDROGRAPHER, GEODESIST)



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

PACIFIC HYDROGRAPHIC PARTY
614-A East 5TH Street
Benicia, CA 94510

19 January 1988

N/MOP223:frd

ATTEN: Maggie McHugh
BRISBANE MARINA
400 Marina Blvd.
Brisbane, CA 94005

Dear Maggie,

As promised in late October 1987, I am submitting a smooth copy of our survey to verify the existence of the charted 4-ft channel leading into the vicinity of the Brisbane Marina. The survey soundings are plotted at Mean Lower Low Water (MLLW) tidal datum, using predicted tides.

As one can see, the survey depths are at least 3-ft deeper than is shown on the chart (copy attached). The shoalest depth, leading into the Brisbane Marina, is 7 feet. This would be the new controlling depth. The new edition of Chart #18651 will indicate the new controlling depth, once the survey has been verified and compiled by NOAA Nautical Chart Division in Rockville, MD.

The controlling depth leading into the Oyster Point Marina has changed. The chart shows "2 ft rep 1983". Survey depths show least depths of 8 to 9 feet. A difference of 6 feet. These changes should be indicated on the next edition of Chart # 18651, which should be available for distribution in late 1988 (hopefully).

The data submitted is subject to change and should not be used for navigational purposes.

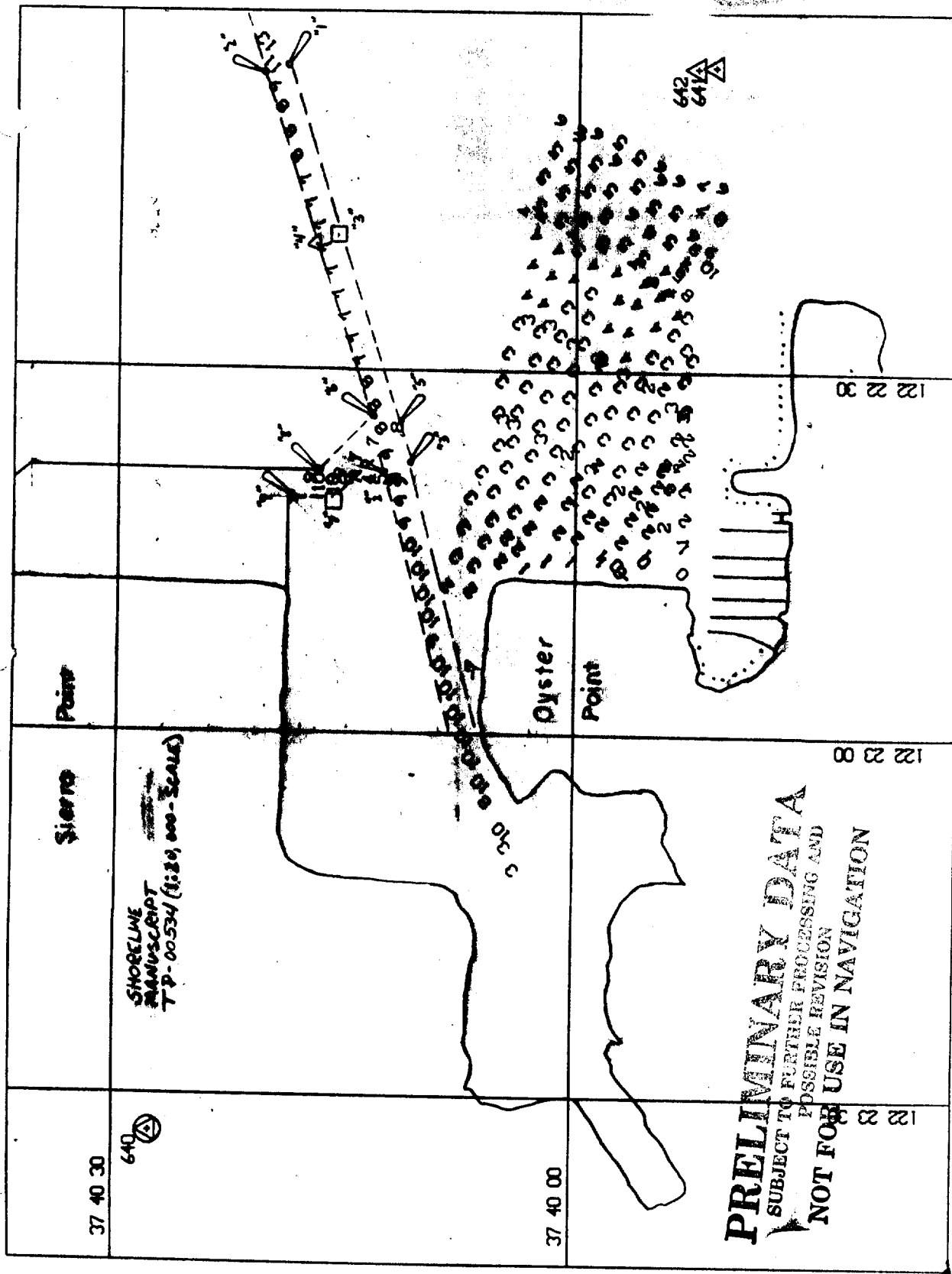
I apologize for the delay in submitting this data. The PACIFIC HYDROGRAPHIC PARTY (PHP) would like to appreciate Brisbane Marina for all the assistance and support given to us during the survey. For questions and/or requests please write or call (707) 746-8189. THANKS!

SINCERELY,

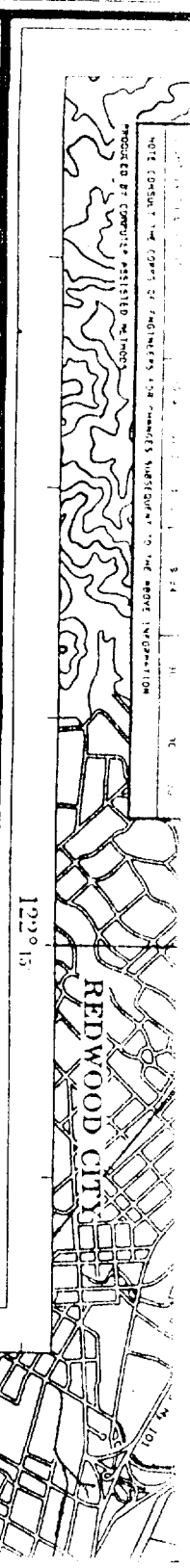
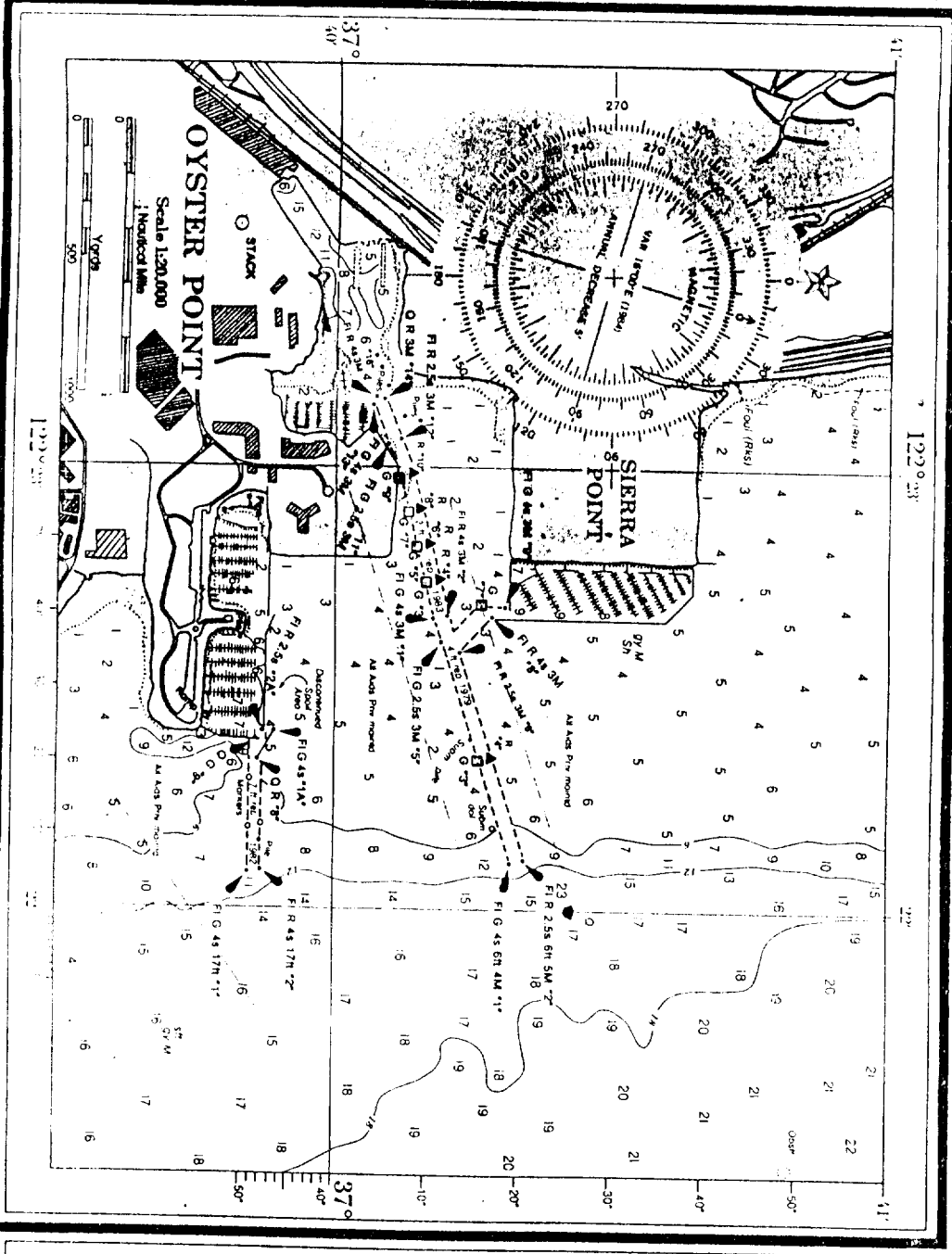
* BRISBANE MARINA ENTRANCE CHANNEL

Federico R. Diaz
Chief, PHP





1:10,000 SCALE



ITEM
#168



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
PACIFIC HYDROGRAPHIC PARTY
614-A East 5TH St.
Benicia, CA 94510

18 November 1987

Mr. Mike Lind
Vice President
JERICO DREDGING, INC.
100 East D St.
Petaluma, CA 94952

Dear Mr. Lind:

On 07 November 1987 the Pacific Hydrographic Party (PHP) was conducting hydrographic survey operations at Latitude $37^{\circ}37'43''\text{N}$, Longitude $122^{\circ}15'34''\text{W}$ southeast of San Bruno Shoal and north of the San Mateo Bridge, sounding a 10-foot shoal in approximately 14 to 18 feet of water.

On the following day, a dredge of JERICO DREDGING INC, was observed conducting dredging operations at or near the above geographic location.

The PHP is presently conducting sounding operations in the South San Francisco Bay to upgrade the existing nautical charts of the area.

In a phone conversation with Mr. Jerry Morris on 17 November, he indicated that JERICO DREDGING is presently dredging for oyster shells within the area of interest about two days a week.

At this point, there are slight differences between the present survey depths and charted depths. The bottom shows signs of scouring within the area mentioned above, but is known to be dynamic in nature.

We request a memo from your office verifying dredging operations at the geographic location of interest, as this would help us process existing field sounding data through our verification headquarters in Seattle, Washington. Also, enclosed is a chartlet of the area. We request that your office outline the actual area being dredged as this will be helpful to the mariner on the next edition of Chart #18651.

For questions, please call (707) 746-8189. Your cooperation in this matter is appreciated.

Sincerely,

Federico R. Diaz
Chief, PHP



JERICO DREDGING, INC.

OYSTER SHELL
SAND
TOWING
BARGING

100 EAST "D" STREET • PETALUMA CA 94952 • (707) 762-7251

#168

DECEMBER 1, 1987

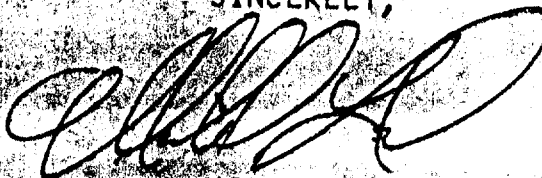
MR. FEDERICO DIAZ
CHIEF, PHP
NATIONAL OCEAN SERVICE
614-A EAST 5TH STREET
BENECIA, CA 94510

DEAR MR. DIAZ,

AS PER YOUR REQUEST OF NOVEMBER 18, 1987 I HAVE OUTLINED
THE AREA THAT WE DREDGE OYSTER SHELL ON THE CHART YOU
PROVIDED.

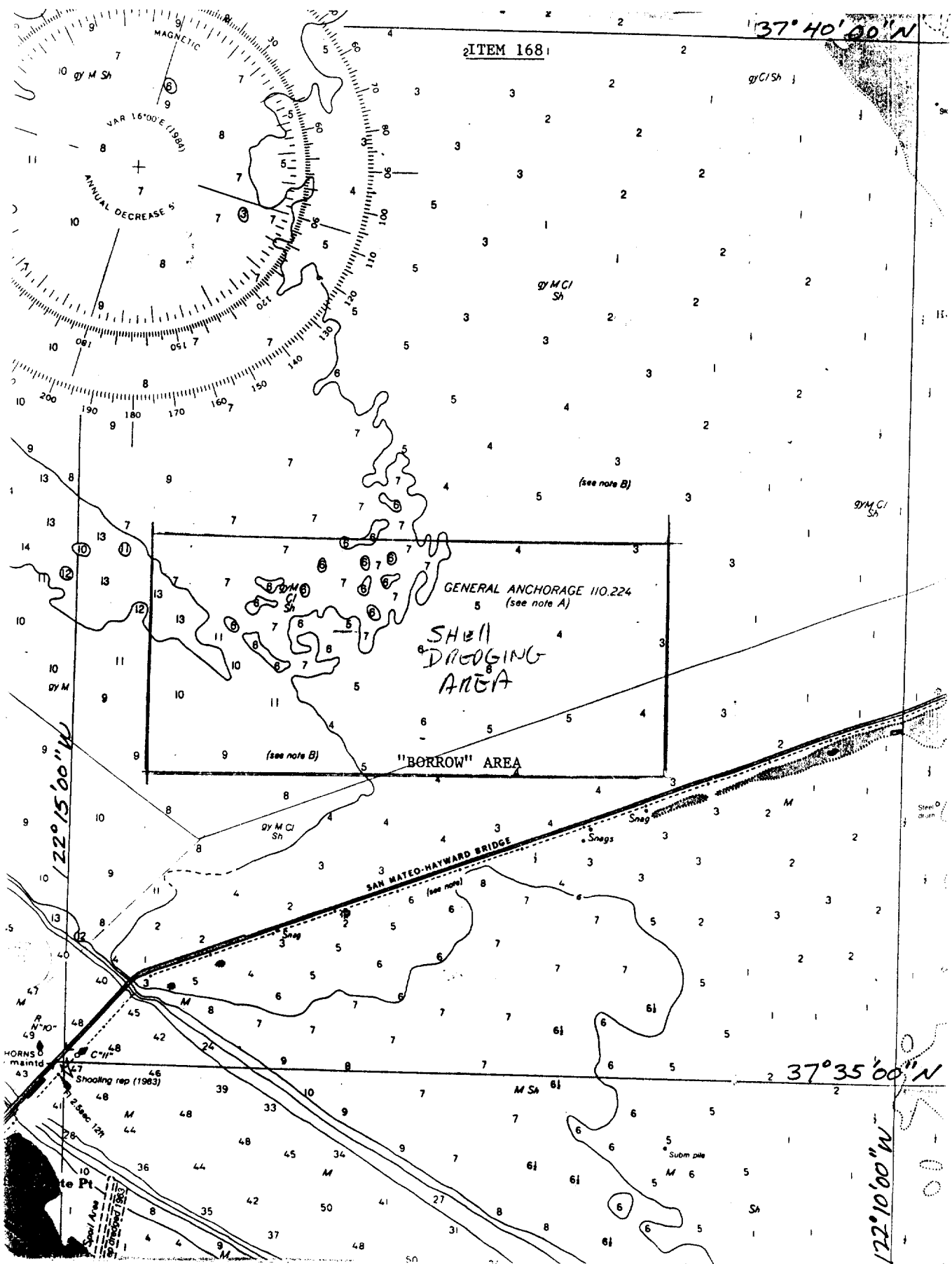
IF YOU NEED ANY FURTHER ASSISTANCE PLEASE LET ME KNOW.

SINCERELY,



MICHAEL LIND
VICE-PRESIDENT

ML/CT



100-METER RADIUS BOTTOM CIRCLE DRAG SET UP

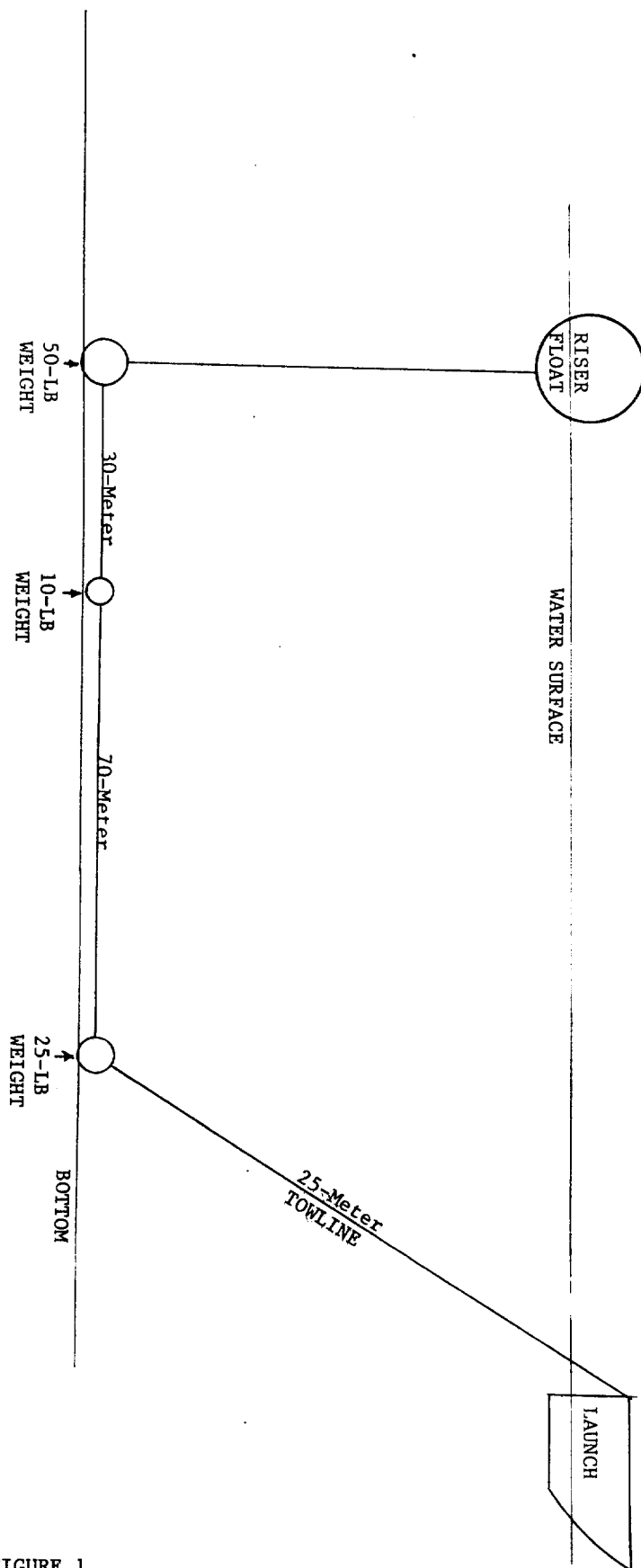


FIGURE 1

DRAWING NOT TO SCALE

DRAWING NOT TO SCALE

WIRE DRAG CONFIGURATION

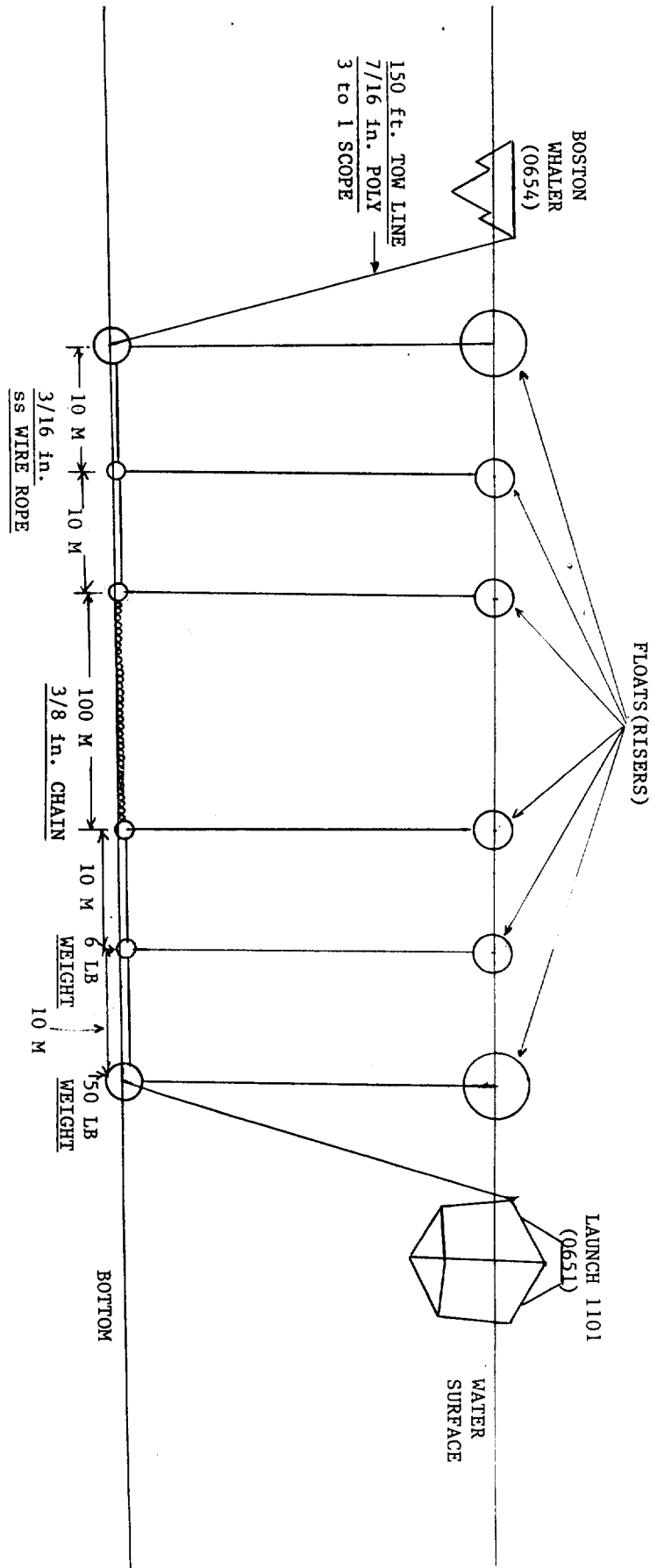


FIGURE 2

DRAWING NOT TO SCALE



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY

PACIFIC HYDROGRAPHIC PARTY - NOAA
1A UCCELLI BLVD.
REDWOOD CITY, CA 94063

11 August, 1983

TO: N/MOP21 - Ned C. Austin

THRU: N/MOP - Charles K. Townsend

FROM: N/MOP223 - Pamela R. Chelgren 

SUBJECT: Pre-Processing Critique of H-9984, dated 7/20/83

Section II.C., paragraphs 4 and 5 of the critique maintain that the wide beam fathometer search for the least depths under the San Mateo - Hayward Bridge was insufficient. Our considered belief is that it was adequate and we did find the least depths. Our judgment is based on the facts that: 1) the 45° beam gave us a swath of 8 meters in 38 feet of water (unreduced); 2) besides the 10-meter spaced lines run, there were two 2-hour extensive drift searches that were easily controlled between the bridge's main span and they most certainly gave us an effective coverage of better than 5 meters for that 8-meter swath; and 3) I have been informed in the past by several acoustical engineers (at Klein and Raytheon) that the wider a transducer beam gets the less and less it looks like a narrow beam trace on peaks and deeps. I am convinced that the copy of the fathogram that was appended to the critique showed a least depth for our wide beam. I therefore feel the search was complete and adequate.

ITEM 169

Other search methods were ruled out because of the strong and eddying currents, and the zero-foot water visibility. There is no such thing as slack current at the main span of the bridge. Instead it weakens and develops unpredictable eddies, and then changes direction. Diving operations would have been unsafe. A small-boat wire/chain drag would have been ineffective and inconclusive. (The rig would ride up over the clay and silt ridges in that eddying current.) Note: USGS gave us the bottom characteristic. They conduct geological studies of the extensive sediment plumes at the bridge.

The raw data records on this investigation are in the Cahier for JD's 087, 097, and 150/1983. Our discussions in the Descriptive Report are contained in Section K/H-8275/Soundings/Item 2; Section L/Soundings/Item 4; Section L/Investigation E; and the two paragraphs immediately following the list of investigations.

cc: N/MOP22
H-9984 Descriptive Report
N/CG24



Non-sounding Features.

The San Mateo Bridge Transmission Towers still exist as depicted on prior survey H-8027.

H-8275, 1:10,000 Scale, 1956.

Soundings.

Prior survey H-8275 has an agreement of ± 2 feet with survey H-9984 (allowing a positional shift of $\pm 1\frac{1}{2}$ mm) except for the following:

1. The area around the sewer pipeline south of the San Mateo-Hayward Bridge (latitude $37^{\circ}34'30''$ N, longitude $122^{\circ}15'28''$ W) is deeper by up to 5 feet than shown on survey H-8275 (see development G). It is probable that the change in this area was caused by the dredging done to lay the pipeline. It is recommended that survey H-9984 be used to update the chart.
- ITEM 169 2. The area just northwest and southeast (within 0.1 Nm) of the San Mateo-Hayward Bridge in, and around, the main ship channel has deepened up to 10 feet in some areas and shoaled up to 14 feet in others in a location with depths of 34 to 51 feet. There is evidence on the fathograms of some scouring. Telephone conversations with Dave Rubin and Dave McCulloch, Geologists, U.S. Geological Survey, Menlo Park, California, (415) 856-7103 confirmed this. They stated that there are sediment plumes extending away from the San Mateo-Hayward Bridge, there is localized scouring and ridges in their side scan sonar records, the grain size of the sediment is in the silt and clay categories (finer than sand), and that this condition has existed for the last five years probably because of the abnormally large tides California has been experiencing during this time. It is recommended that survey H-9984 be used to update the chart.
3. The bank on the northeast side of the main ship channel, just southeast of the San Mateo-Hayward Bridge (latitude $37^{\circ}35.4'$ N, longitude $122^{\circ}14.3'$ W) and extending northeast to the east edge of the survey sheet has deepened 2 to 4 feet out to the 12 foot contour. On prior survey H-8275 it is shown as uncovering 1 foot; now the least depth is 2 feet and no bare spots were observed on a minus 1 foot tide. This deepening was probably caused by the dredging of the sand and shell banks immediately north of the San Mateo-Hayward Bridge which allowed the two knot currents experienced here to erode the shoal spots. It is recommended that survey H-9984 be used to update the chart.

Additional investigation should have been conducted to ensure that the least depth was observed.

*ITEM 170 A holiday exists on the north side of the San Mateo - Hayward Bridge (Attachment B).

Names of horizontal control stations on field sheets should be consistent with station names contained in or submitted for entry to the NGS data base. The year of establishment is part of the station name for stations established before January 1977, as "GUANO ISLAND 1851". For stations established after January 1977 the year of establishment supplements the station name and should be separated from it by a comma or parentheses, as "BLOCK 2, 1982" or "BLOCK 2 (1982)". Section 2.2.04.3 of the NGS Operations Manual is the reference for naming horizontal control stations.

Field sheet notes are well done.

D. Descriptive Report

The Descriptive Report is well done, except that section A (Project) does not acknowledge all changes to the project instructions.

The inclusion of photographs of specific items investigated or observed, including pipes, piles, poles, etc., is excellent.

E. Echograms

Echograms are well maintained and annotated. Echosounder checkout frequency and procedures generally satisfied PMC OPODER requirements.

F. Sounding Volumes and Raw Data Printouts

Field data were generally well annotated and complete. Cross references to precedent and subsequent investigations in a common area are excellent.

Two deficiencies were noted in association with range-azimuth operations:

1. The observing station was not identified on one occasion.
2. Check initials were not observed. Check initials are required by section 4.4.4 of the Hydrographic Manual.

N. Survey Acceptance

The preprocessing examination for H-9984 was conducted under the time constraints of Hydrographic Survey Guideline No. 15. All comments contained herein are based on a spot check of the data, and it is likely that some problem areas have not been addressed.

ITEM 188
AWQIS 51147

Commander
Eleventh Coast Guard District

Building 10, Rm 214
Coast Guard Island
Alameda, CA 94501-5100
Staff Symbol: (oan)
(415) 437-3514

16591
San Francisco Bay (32.0)
5 February 1988

Mr. Burch C. Bachtold
Director
CALTRANS District 4
150 Oak Street
San Francisco, CA 94102

Dear Mr. Bachtold:

The Coast Guard and the National Ocean Survey recently inspected the Dumbarton Highway Bridge. The bridge is still displaying some temporary navigation lights which had been installed to guide vessels through both the old and new bridges during the construction phase. The four red margin of channel lights on the soffit are the temporary lights. Since the permanent pier lights are in place, the temporary lights should be removed or turned off.

The National Ocean Survey found several submerged obstructions at the site of the old Dumbarton Bridge main navigation channel piers/pier fenders. The enclosed letter describes their survey and provides a point of contact. The material found was chunks of concrete which must have been part of the old bridge overlooked during removal operations. Your Coast Guard bridge permit specifies that all parts of the old bridge were to be removed to the natural bottom of the waterway. Please submit a plan and schedule for removal of the bridge debris. Since the removal was a condition of your permit, no additional approvals are required for the work except normal Coast Guard review of work in navigable channels.

Sincerely,

W. R. TILL
Chief, Bridge Section North
By direction of the District Commander

Encl: (1) NOS ltr dtd 16 DEC 87
(2) Bridge permit amendment 138-74a-12

Copy to: NOS Survey Party Benicia ✓
USCG District 11
USCG Marine Safety Office SF
USCGAUX Jim Duncan

Department of Transportation
United States Coast Guard

UNITED STATES GOVERNMENT MEMORANDUM

5 February 1988
16500/16591

Subj: ITEM FOR LOCAL NOTICE TO MARINERS

From: (oan-br-n)
To: (oan)

Ref: (a) My ltr to CALTRANS dtd 5 FEB 88
(b) NOS ltr dtd 16 DEC 87

1. The NOS Survey party reported finding submerged obstructions at the site of the former Dumbarton Highway Bridge navigation channel piers. I have notified CALTRANS to remove the material. Please publish the following item in the LNM 7/88 and quarterly until the material is removed:

NORTHERN CALIFORNIA - SAN FRANCISCO BAY - DUMBARTON BRIDGE. The National Ocean Survey has found submerged obstructions at the location of the former Dumbarton Highway Bridge main navigation channel piers at Lat. 37-30-11.5N, Long. 122-07-15.8W and Lat. 37-30-24.3N, Long. 122-06-56.6W. There are no obstructions in the federal channel through the site.

Charts: 18651, 18652

W. R. TILL

Copy to: NOS Survey Party Benicia

TWR 3/12/87

SURVEY/CHARTING REQUEST DOCUMENTATION

TO: N/CG2

FROM: N/MOP223

SUBJECT: Request for Survey ~~on Chart~~

Today I was visited by:

Name: Robert J. Guinn

Title: Senior Engineer, Maintenance

Representing: California Department of Transportation (CALTRANS)

Phone Number: (415) 557-0155 / 464-0359

Address: P.O. Box 7310 (Street or Number)

San Francisco, CA City

94120 Zip Code

This person requested that NOAA perform a survey ~~on produce a chart~~ of the following area(s): Dumbarton Highway Bridge

37/30/16.70 N, 122/07/07.32 W

This person believes that a survey ~~on chart~~ of this area(s) are necessary because:

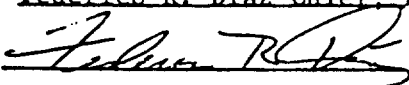
Upon completion of the recovery of the submerged debris in the vicinity of the old Dumbarton Highway Bridge, CALTRANS requests an NOS Survey Party survey the area to ensure that all debris has been cleared to the mudline.

(Refer to Descriptive Report FE-311, AWOIS #51147 "188")

The above request is an accurate and valid documentation of a survey chart request received by:

Telcon: 5/30/89 with Mr Guinn indicated that no removal as of this date has been accomplished. RWD

Name/Title: Federico R. Diaz Chief, PHP

Signature: 

Date: 04/13/88

DEC 8



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

PACIFIC HYDROGRAPHIC PARTY
614-A East 5TH Street
Benicia, CA 94510

14 December 1987 N/MOP223:FRD

TO: N/MOP - Robert L. Sandquist

THRU: N/MOP21 - Thomas W. Richards

FROM: N/MOP223 - Federico R. Diaz

SUBJECT: Request for extension of data submission for Field Examinations of Chart Numbers 18650 and 18651.

Field work for Field Examinations for Chart Numbers 18650 and 18651 were completed on 01 December and 17 November 1987, respectively.

The PACIFIC HYDROGRAPHIC PARTY requests extensions of data submission for both surveys until 31 January 1988.

The reasons for this request for extensions are:

- Large quantities of data acquisition, and lack of a full compliment of personnel for processing. (Should be six people; at present two people short).
- Survey preparations for OPR-L202-PHP-88, Carquinez Strait, CA, to begin field operations by early to mid January 1988.
- At present, PHP's Survey Launch 1101 is in the yard for its annual winter haul-out, which requires the attention of the party chief and engineering technician.

Your cooperation is appreciated.

*I concur with extension
OK - JWR 12/17/87 TWR 12/17/87*

Approved: Robert L. Sandquist 12-18-87 Date

Disapproved: Robert L. Sandquist Date





U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

PACIFIC HYDROGRAPHIC PARTY
614-A East 5TH Street
Benicia, CA 94510

22 January 1988

N/MOP223:frd

TO: N/MOP - Robert L. Sandquist

THRU: N/MOP21 - Thomas W. Richards

FROM: N/MOP223 - Federico R. Díaz

SUBJECT: Request for second extension of data submission for field examinations of Charts #18650 and 18651.

Field work for both field examinations are 100% complete. Presently, PHP personnel (three people) are completing the descriptive reports; annotating the smooth field sheets for both field exams, having extensive aluminium clad welding and bottom painting on Launch 1101 performed, repairing and tuning all electronic/mechanical equipment to begin field operations.

The PACIFIC HYDROGRAPHIC PARTY requests extensions of data submission of both field exams until 29 February 1988 for the following reasons:

- I reported to the PHP about mid-October 1987. Field work for Field Exam of Chart 18650 was nearly complete. It is my feeling that if I am to approve the survey, all field work, prior to my arrival, should be inspected for completion. Field work for this field exam began in mid-May 1987 and was completed 01 December 1987. The final inspection for completion took longer than originally anticipated.
- At present, PHP personnel is down to two commissioned officers and one engineering tech. With the loss of survey and cartographic techs, processing and annotation of smooth field sheets has become slow and cumbersome. It will remain a "push" to complete these surveys by the end of February.

Due to the limitation of personnel, survey preparations for OPR-L202-PHP-88, Carquinez Strait, CA has temporarily come to a halt. All of our attention is on completion of these two field exams and gearing up Launch 1101 for field work.

Your cooperation is appreciated.

1st Endorsement: I concur with extension.

Thomas W. Richards 1/25/88

N/MOP21/22

Extension approved:

Robert L. Sandquist

1-26-88
Date



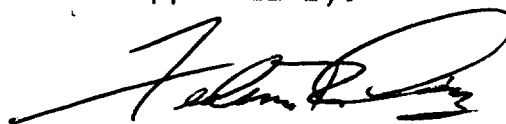
Approval Sheet

OPR-L123-PHP-87

Field Examination
Southern San Francisco Bay

The Chief of Party has inspected all field data on a weekly basis. All reports and records are complete. This survey is adequate for charting purposes and no additional field work is necessary.

Approved by:

A handwritten signature in black ink, appearing to read "Federico R. Diaz", written over a horizontal line.

LT Federico R. Diaz, NOAA
CHIEF
PACIFIC HYDROGRAPHIC PARTY
NATIONAL OCEAN SERVICE (NOS)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: January 25, 1988

MARINE CENTER: Pacific

OPR: L123

HYDROGRAPHIC SHEET: Field Examination of Chart 18651 *FE-311*

LOCALITY: Oyster Point to Dumbarton Point, San Francisco Bay, CA

TIME PERIOD: November 4 - 16, 1987

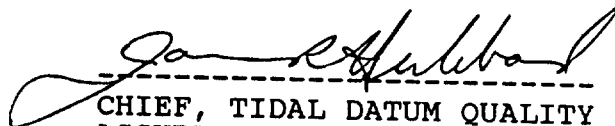
TIDE STATION(S) USED: 941-4458 San Mateo Bridge, CA
941-4750 Alameda, CA

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 941-4458 = 14.66 ft.
941-4750 = 3.27 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 941-4458 = 7.0 ft.
941-4750 = 5.9 ft.

REMARKS: RECOMMENDED ZONING

1. For AWOIS Items 173, 174, 176, zone direct on 941-4750.
2. For AWOIS Items 151, 160, 162, 166, 167, 50781, 50782, zone on 941-4750 and apply a +0 hr 15 minute time correction and a X1.11 range ratio to all heights.
3. For AWOIS Items 168, 169, 170, zone direct on 941-4458.
4. For AWOIS Item 51147 zone on 941-4458 and apply a +0 hr 20 minute time correction and a X1.13 range ratio to all heights.



CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

GEOGRAPHIC NAMES

FE-311

Name on Survey	A ON CHART NO. 18651 B ON PREVIOUS SURVEY NO. C ON U.S. QUADRANGLE MAPS D FROM LOCAL INFORMATION E ON LOCAL MAPS F P.O. GUIDE OR MAP G RAND McNALLY ATLAS H U.S. LIGHT LIST K									
	A	B	C	D	E	F	G	H	K	
CALIFORNIA (title)										1
LITTLE COYOTE POINT										2
OYSTER POINT										3
SAN BRUNO, POINT										4
SAN FRANCISCO BAY										5
SIERRA POINT										6
										7
										8
										9
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										24
										25

Approved:

Charles E. Harrington
Chief Geographer - N/CG 2x5

APR 12 1988

HYDROGRAPHIC SURVEY STATISTICS

FE-311

RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		5	SMOOTH OVERLAYS: POS., ARC, EXCESS		5
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		3
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS
ACCORDION FILES	1				
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS (List):

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List): 5 paper enlargement of chart 8651, 52nd Edition

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			764
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	39		39
VERIFICATION OF SOUNDINGS	183		183
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	141		141
COMPARISON WITH PRIOR SURVEYS AND CHARTS		16	16
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		55	55
GEOGRAPHIC NAMES			
OTHER: Digitization			
USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	363	71
Pre-processing Examination by LT J. Miller	Beginning Date 2/19/88	Ending Date 3/30/88	
Verification of Field Data by R.N. Mihailov	Time (Hours) 363	Ending Date 9/2/88	
Verification Check by S. Otsubo, B. Olmstead	Time (Hours) 33.0	Ending Date 6/20/88	
Evaluation and Analysis by C.R. Davies	Time (Hours) 71	Ending Date 9/19/88	
Inspection by D.J. Hill	Time (Hours) 10	Ending Date 10/31/88	

PACIFIC MARINE CENTER
Evaluation Report
FE-311

1. INTRODUCTION

Survey FE-311 is a field examination accomplished by the Pacific Hydrographic Party under the following Project Instructions:

OPR-L123-PHP-87, dated February 10, 1987

CHANGE NO. 1, dated March 20, 1987

This field examination occurred in southern San Francisco Bay, California between Oyster Point and Dumbarton Point. The survey investigated ten unresolved AWOIS/Office Review Items originating from prior surveys. The results will be used to update chart 18651. Five separate surveyed areas extend from latitude $37^{\circ}30'00''\text{N}$, north to latitude $37^{\circ}40'30''\text{N}$ and from longitude $122^{\circ}07'00''\text{W}$, west to longitude $122^{\circ}23'20''\text{W}$. The bottom slopes gradually from a shoreline consisting of numerous cultural features with marsh and mud flats to a maintained channel in the center of the bay. The bottom consists of mud and shells. Depths range from 0 feet nearshore to 52 feet in the dredged channel.

Predicted tides for Fort Point, California were used for the reduction of soundings during field processing. Approved hourly heights zoned from San Mateo Bridge and Alameda, gages 941-4458 and 941-4750 respectively, were used during office processing.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. The TRA, sound velocity and electronic control correctors are adequate. An accompanying computer printout contains the parameters and the correctors.

A digital file, generated for this survey, includes categories of information required to comply with N/CG2 Hydrographic Survey Guideline No. 23, Completion of Digital Hydrographic Surveys, September 7, 1983. Certain descriptive information, however, may not be in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete information.

2. CONTROL AND SHORELINE

Sections F and G of the hydrographer's report and the Horizontal Control Report for OPR-L123-PHP-87 contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are 1987 field and published values based on NAD 27. These values were used during office processing for the computation of positions. The smooth sheet and accompanying overlays are annotated with NAD 83 adjustment ticks based on

values determined by N/CG121. Geographic positions based on NAD 83 may be plotted on the smooth sheet utilizing the NAD 27 projection by applying the following corrections:

latitude: 0.241 seconds (7.4 meters)
longitude: -3.887 seconds (-95.3 meters)

The year of establishment of control stations shown on the smooth sheet originates with hydrographer's signal list and is subject to change pending certification of the data by NGS.

There are no weak fixes (angles of intersection less than 30 degrees or more than 150 degrees) noted in this survey.

Contemporary shoreline maps are not available for this survey. Shoreline information originates from chart 18651, 35th Edition, dated July 5, 1986, scale 1:40,000 and is shown in brown on the smooth sheet for orientation purposes only.

Two shoreline changes are found on sheet 4 of 5. The old Dumbarton Bridge limits (east end) were located at latitude $37^{\circ}30'24.37''\text{N}$, longitude $122^{\circ}06'56.57''\text{W}$. The change is depicted as approximate since position fixes were taken on the offshore end of the bridge remains. The western portion of the bridge remains were located at latitude $37^{\circ}30'11.52''\text{N}$, longitude $122^{\circ}07'15.79''\text{W}$. Both these changes represent significant differences from that presently charted.

3. HYDROGRAPHY

Hydrography is adequate to:

- a. delineate the bottom configuration, determine least depths, and draw the standard depth curves;
- b. reveal there are no significant discrepancies or anomalies requiring further investigation; and
- c. show the survey was properly controlled and soundings are correctly plotted.

4. CONDITION OF SURVEY

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3; the Hydrographic Survey Guidelines; and the PMC OPORDER.

5. JUNCTIONS

Junctions were not required by the Project Instructions. A comparison with charted depths reveals good agreement with the present survey.

6. COMPARISON WITH PRIOR SURVEYS

H-9819 (1979) 1:10,000
H-9872 (1980) 1:10,000
H-9952 (1981-82) 1:10,000
H-9984 (1981-83) 1:10,000
H-10132 (1984-85) 1:10,000

The AWOIS/Office Review Items investigated during this field examination were either carried forward to the above surveys from 1950 vintage surveys or were recommended for additional field work. Each of these AWOIS/Office Review Items are discussed, completely and adequately in section L of the hydrographer's report.

Survey FE-311 is adequate to supersede the prior surveys within the common area.

7. COMPARISON WITH CHART

Chart 18651, 35th Edition, dated July 5, 1986; scale 1:40,000.

a. Hydrography

Charted information originates with the prior surveys mentioned in section 6 of this report and from miscellaneous sources. For more details see section L of the hydrographer's report.

Survey FE-311 is adequate to supersede charted hydrography within the common area.

b. AWOIS

There are no AWOIS items originating from miscellaneous sources applicable to this survey.

c. Controlling Depths

The charted 4-foot shoaling of the channel beginning at latitude 37°40'20"N, longitude 122°22'07"W was investigated. Mid-channel depths of 7 to 11 feet were observed, however, edge shoaling of 4 feet was detected in the vicinity of latitude 37°40'10"N, longitude 122°22'43"W. It is recommended that the charted advisory note regarding 4-foot depths be deleted and replaced with a 4-foot sounding and blue tint at latitude 37°40'10.5"N, longitude 122°22'41.7"W. This location is at the channel edge, however, the extent of this shoaling into the channel was not fully developed by the hydrographer. The charted 2-foot shoaling in the same channel was not confirmed and it is recommended that this note be removed from the chart. Two Foot depth From H9819/79 (VIA CL686/83). Channel obviously dredged since 1979 survey.

d. Aids to Navigation

The following privately maintained aids to navigation were not investigated and are plotted from the DIP file for orientation purposes only.

Oyster Cove Marina Lights 1, 2, 11, 12, 13, 14, 16
Oyster Cove Marina Daybeacons 3, 4, 5, 6, 7, 8, 9, 10

The above aids to navigation mark the entrance channels to Oyster Cove Marina and Brisbane Marina (Sierra Point) and are located between latitude 37°40'12"N, longitude 122°22'39"W and latitude 37°40'04"N, longitude 122°23'09"W.

See section N, hydrographer's report, for aids located during this survey.

e. Geographic Names

Names appearing on the smooth sheet and in the survey title have been approved by the Chief Geographer.

f. Dangers to Navigation


The hydrographer reported five submerged obstructions and one submerged ruins to the USCG and N/CG222. Copies of the messages/reports are attached. No additional dangers were discovered during office processing.

8. COMPLIANCE WITH INSTRUCTIONS


Survey FE-311 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is a excellent field examination. Additional field work is requested by the California Department of Transportation upon removal of the submerged debris in the vicinity of the old Dumbarton Highway Bridge, latitude 37°30'16.70"N, longitude 122°07'07.32"W (see attached letters, dated February 5, 1988 and April 13, 1988).


C. R. Davies
Cartographer

This survey has been examined and it meets Charting and Geodetic Services' standards and requirements for use in nautical charting. Approval is recommended.


Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR FE-311

I have reviewed the smooth plots, accompanying data, and reports of this hydrographic survey. The hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth plots and digital data file for use in nautical charting.


Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

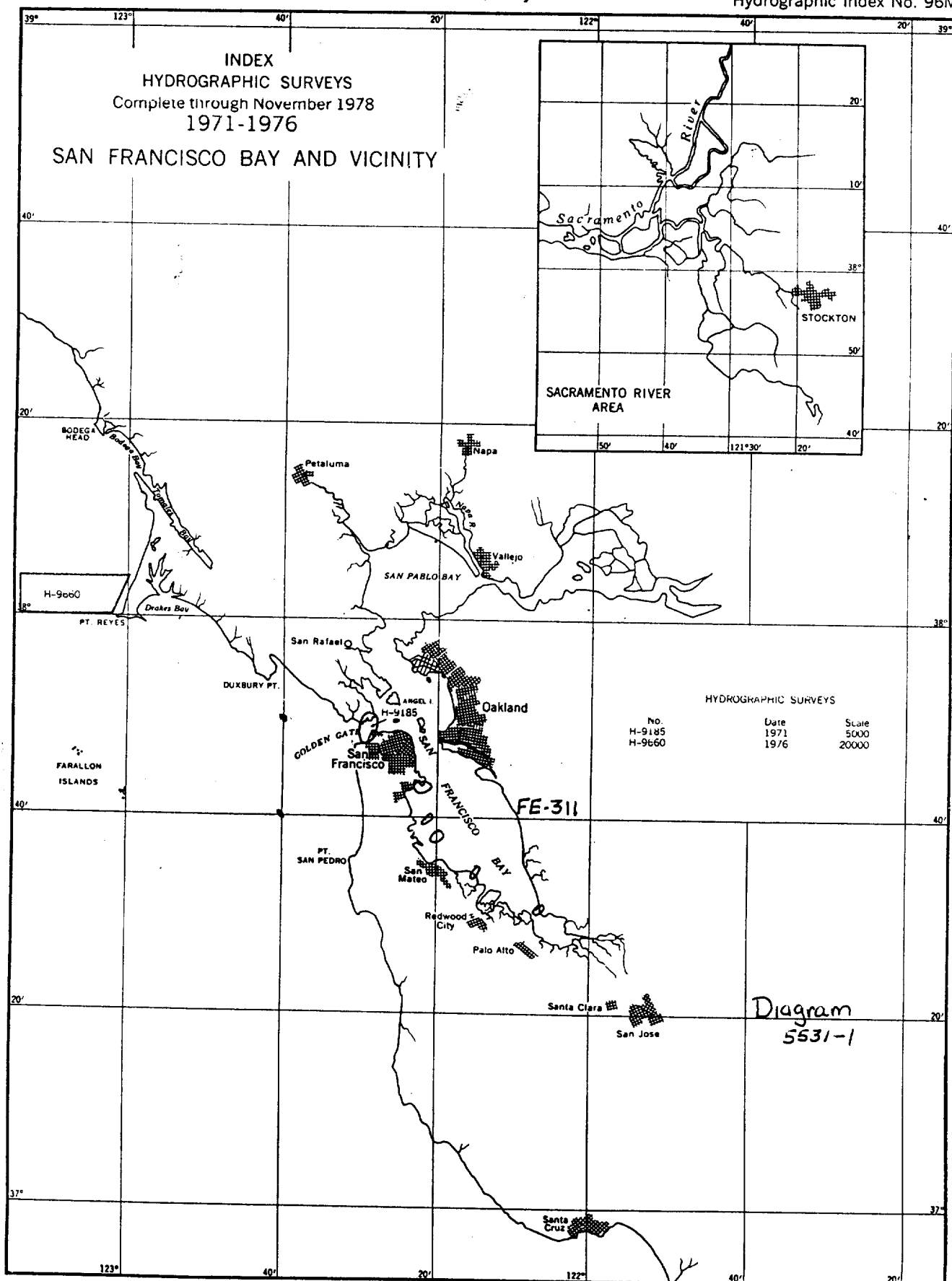


After review of the smooth plots and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

 11/8/88
Director, Pacific Marine Center (Date)

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 96M



37° 39' 00"

122°22'00"

Handwritten numbers on a grid, with a circled '10' and a line through it. The numbers are arranged in rows and columns, with some numbers appearing multiple times. The circled '10' is in the second row, third column. A line is drawn through the circled '10' and extends downwards.

[illegible]

122°22'00"

37° 38' 30"

NAD 83

5/12/88 R.N.M.
S.H.O.

37°38'30"

37° 38' 30"

**CALIFORNIA, SAN FRANCISCO BAY
SOUTHERN PORTION OF
SAN FRANCISCO BAY**

Soundings in FEET at MLLW

Item 166 Investigation-Discontinued spoil area

Shoreline in brown from Chart 18651 for orientation only

SHEET 1 of 5

122° 22' 30"

122° 22' 00"

18651

122° 15' 30"

122° 15' 00"

37° 38' 30"

37° 38' 30"

FE - 311

**CALIFORNIA, SAN FRANCISCO BAY
SOUTHERN PORTION OF
SAN FRANCISCO BAY**

Date of Survey: November 1987

Scale - 1:10,000

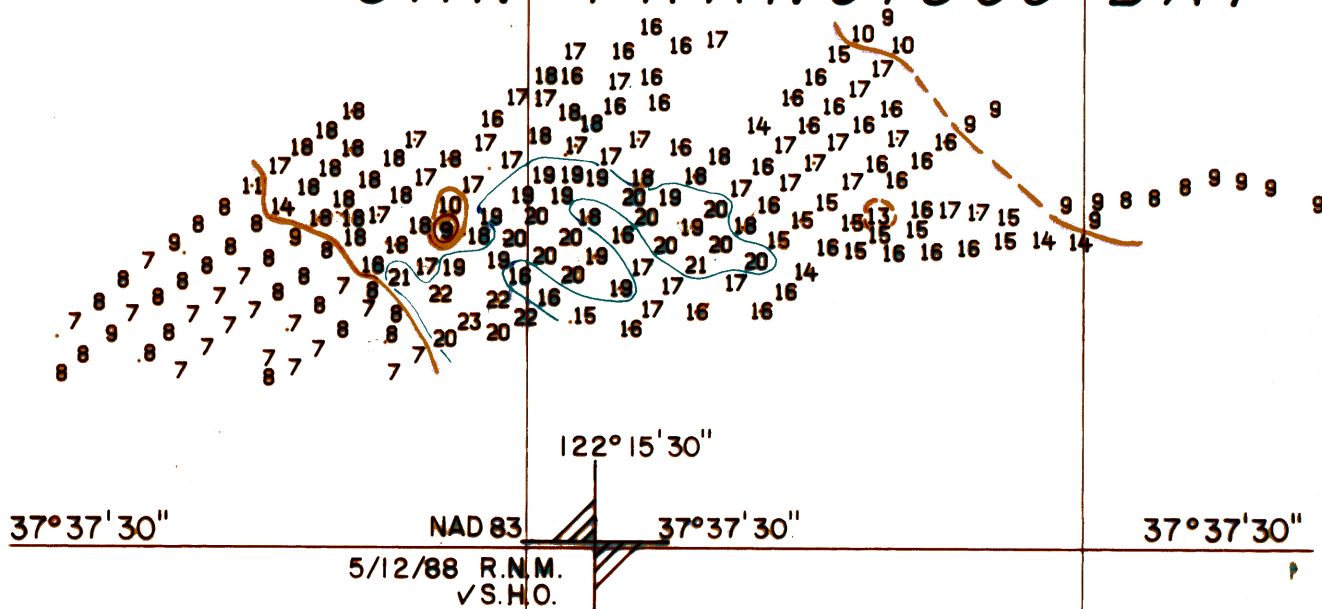
Soundings in FEET at MLLW

Item 168 Investigation - 10 foot shoal

37° 38' 00"

37° 38' 00"

SAN FRANCISCO BAY



SHEET 2 of 5

122° 15' 30"

122° 15' 00"

122° 15' 30"

122° 15' 00"

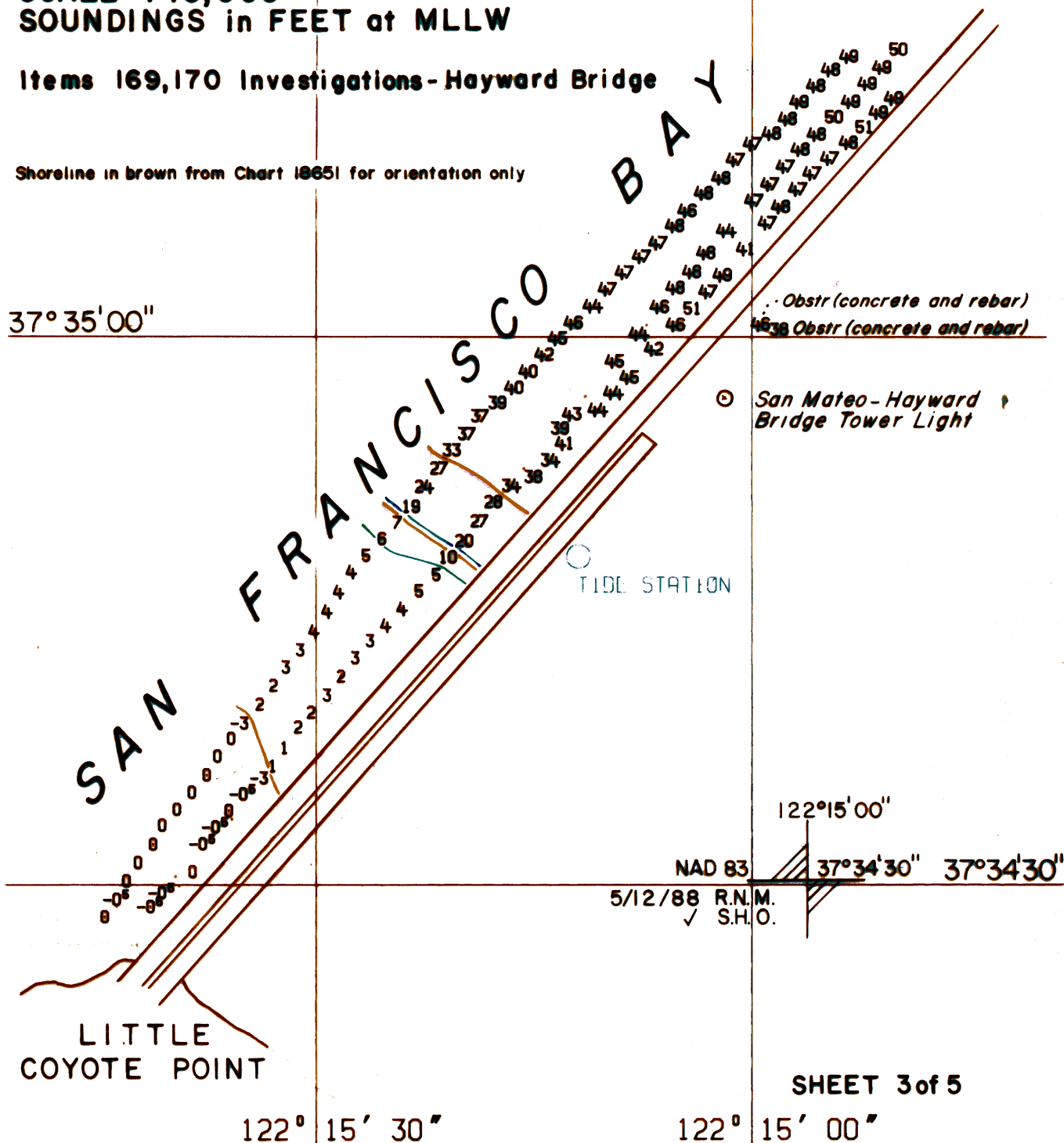
FE - 311

**CALIFORNIA, SAN FRANCISCO BAY
SOUTHERN PORTION OF SAN FRANCISCO BAY**

**Date of Survey: November 1987
SCALE - 1:10,000
SOUNDINGS in FEET at MLLW**

Items 169,170 Investigations - Hayward Bridge

Shoreline in brown from Chart 18651 for orientation only



122° 07' 30"

122° 07' 00"

37° 31' 00"

37° 31' 00"

FE - 311**CALIFORNIA, SAN FRANCISCO BAY
SOUTHERN PORTION OF
SAN FRANCISCO BAY**

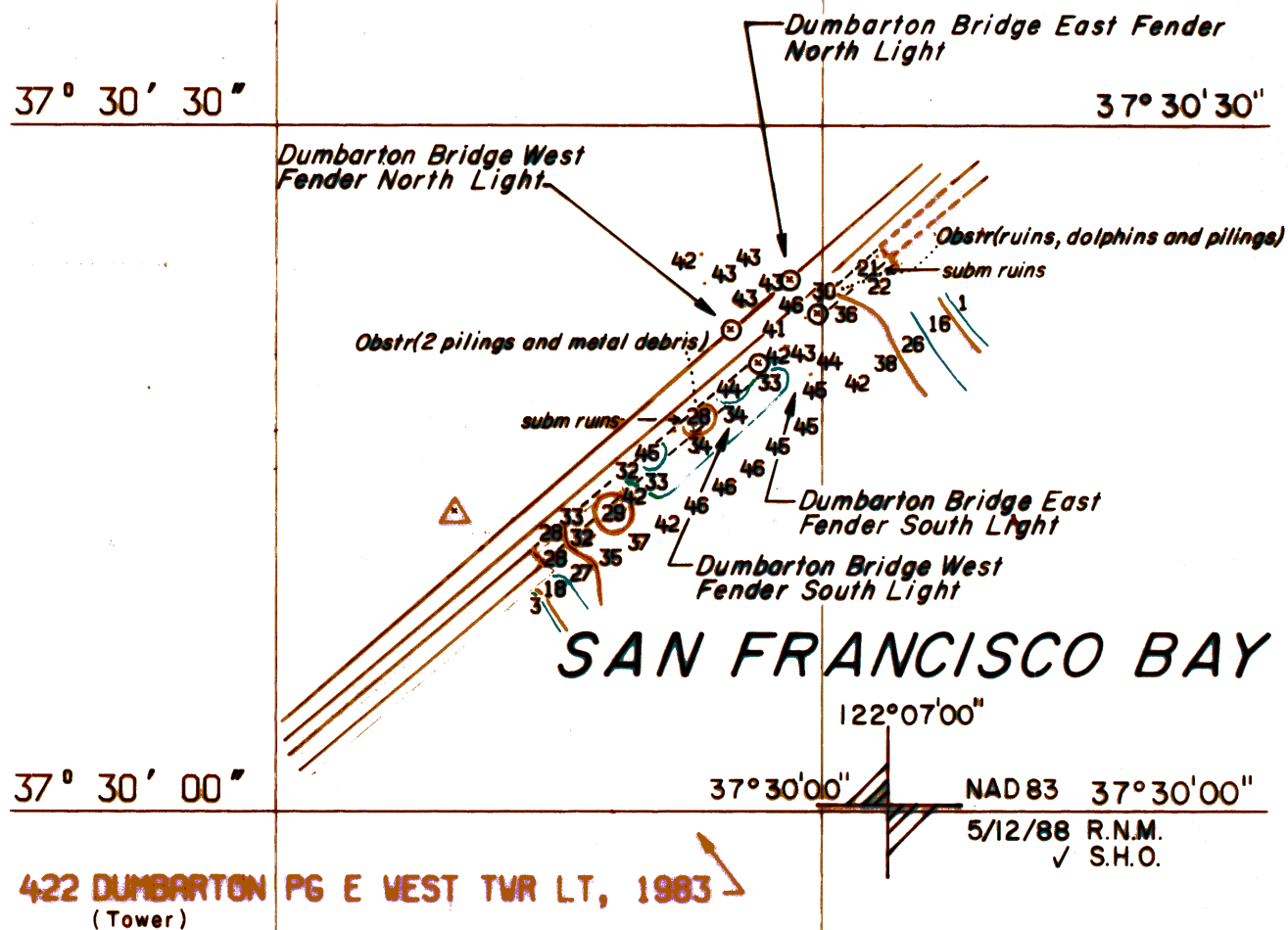
Date of Survey: November 1987

Scale - 1:10,000

Soundings in FEET at MLLW

Item 188, AWOIS 51147 Investigations-Obstructions near Dumbarton Bridge

Shoreline in brown from Chart 18651 for orientation only

**SHEET 4 of 5**

122° 07' 30"

122° 07' 00"

122°23'00"

122°22'30"

FE - 311

CALIFORNIA, SAN FRANCISCO BAY SOUTHERN PORTION OF SAN FRANCISCO BAY

Date of Survey: November 1987

Scale - 1:10,000

Soundings in FEET at MLLW

122°22'30"

37°40'30"

NAD 83

37°40'30"

Items 160, 162, 167, AWOIS 50781, 50782

Shoreline in brown from Chart 18651 for orientation only

5/12/88 R.N.M.

✓ S.H.O.

OYSTER COVE MARINA

LT. 12, 1983

(pile)

OYSTER COVE MARINA

LT. 14, 1983

(pile)

NOTE: Position data for fixed and floating aids to navigation, along the entrance channel to Oyster Cove Marina, originate from the Discrete Independent Position (DIP) file. All aids to navigation are privately maintained.

Oyster Cove Marina Lt. 1, 1983

(pile)

Oyster Cove Marina Lt. 2, 1983

(pile)

Daybeacons 3-10 are affixed to piles

SAN FRANCISCO BAY

OYSTER
POINT(9) obstr
(concrete and rebar)

OYSTER COVE MARINA

LT. 11, 1983

(pile)

OYSTER COVE MARINA

LT. 13, 1983

(pile)

OYSTER COVE MARINA

LT. 16, 1983

(pile)

642 OYSTER POINT MARINA LIGHT 1, 1979

(Field position)

(pile)

641 OYSTER POINT MARINA LIGHT 2, 1979

(Field position)

(pile)

SHEET 5 of 5

122°23'00"

122°22'30"

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-311

~~EXAMINED FOR NM~~

GDBU

11-6-80

- ZE 1-11-90

SUPERSEDES CAGS FORM 8352 WHICH MAY BE USED.